

ARITHMETIC

IN

Whole and Broken Numbers,
Digested after a *Mary*
NEW METHOD,

And chiefly adapted to the
TRADE of *IRELAND*.

To which are added
INSTRUCTIONS
FOR
BOOK-KEEPING.

By ELIAS VOSTER.

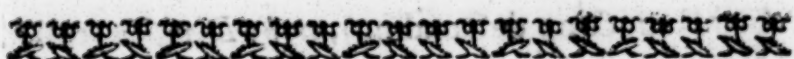
THE FOURTEENTH EDITION,
Carefully collated with the former Editions.

Revised by DANIEL VOSTER

WITH
The DIGNITY of TRADE in
GREAT-BRITAIN and IRELAND:
Extracted from the MERCANTILE LIBRARY,
or, COMPLEAT ENGLISH TRADEMAN.

C O R K:

Printed and Sold by THOMAS WHITE,
opposite the *Exchange*. 1777.



T H E

P R E F A C E.

ALTHOUGH this Book be designed only for the Use of my Scholars, yet it will unavoidably fall into the Hands of others who are not; and since the Method I make Use of differs, in some Respect, from the common Way, I think it necessary to say something concerning it.

It contains such Questions in most of the Rules of Vulgar ARITHMETIC, as I have taught to my Scholars for many Years past; I say it contains only Questions with the Addition of a very few Directions about the Manner of working them: It being designed rather for a Master to teach by, than for a Scholar to learn by of himself: And those Questions are placed in such Order, that all that are of one Nature in their Operation, are contained in a distinct Section by themselves, with an Example at the Beginning of each Section to direct the Learner, and lead him on, as it were by the Hand, to the Resolution of every Question in it: The Ease this Method of Proceeding gives, and the great Service it does, both to MASTER and SCHOLAR, I have for many Years experienced.

I have thought it proper to place Addition of Coin, Weight, &c. after Division, because, in my Opinion, it ought not to be learned until Division is well understood.

As for Reduction, since it is no absolute Rule of itself, but is either performed by Multiplication

iv P R E F A C E.

(called Reduction descending), or by Division (called Reduction ascending), or by both; the Use of my Rule of Multiplication, serves instead of the first, the Use of my Division instead of the second, and my Reduction of English and Foreign Coin, serves instead of the last: For there, both Multiplication and Division are made Use of in each Question.

Some, it may be, will find Fault with the great Number of Questions contained in each Rule, but let them consider, that Youth do not learn so much by Apprehension as Exercise, which not only fixes the Rules of this Art upon their Memories, but by Degrees opens their Judgment to conceive the Grounds and Reasons of it: As for those among them that are more apprehensive than the Generality are, they are not obliged to work all the Questions contained in each Section, a few of each will suffice.

ELIAS VOSTER.

T A B L E S

T A B L E S

OF

Coin, Weight and Measure.

Of Coin.

1 Pound	}	Makes	{	20 Shillings
1 Shilling				12 Pence
1 Penny				4 Farthings

Of Troy Weight.

1 Pound	}	Makes	{	12 Ounces
1 Ounce				20 Penny wts.
1 Penny wt.				24 Grains

Of Avoir-dupois Weight.

1 Tun	}	Makes	{	20 Hundreds
1 Hundred				4 Quarters or 112 lb.
1 Quarter				28 Pounds
1 Pound				16 Ounces
1 Ounce				16 Drams

Of Dry Measure.

2 Cork Bar, or	}	Makes	{	8 Bushels
1 Quarter				4 Pecks Land Measure
1 Bushel				2 Gallons (or 5 Water
1 Peck				2 Pottles
1 Gallon				2 Quarts
1 Pottle				2 Pints
1 Quart				

6 Tables of Coins, Weights and Measures.

Of Apothecaries Weight.

1 lb. Troy	}	Makes	{	12 Ounces
1 Ounce				8 Drams
1 Dram				3 Scruples
1 Scruple				20 Grains

Of Liquid Measure.

1 Tun	}	Makes	{	4 Hhds.
1 Hhd.				63 Gallons
1 Tierce				42 Gallons
1 Gallon				2 Pottles
1 Pottle				2 Quarts
1 Quart				2 Pints

Of Long Measure.

1 Mile	}	Makes	{	8 Furlongs
1 Furlong				40 Perches or Poles
1 Perch				16½ Feet
1 Fathom				6 Feet
1 Ell				3 Feet 9 Inches
1 Yard				3 Feet
1 Foot	}		{	12 Inches

1 Yard is 4 Quarters ; 1 Quarter 4 Nails, or 5 Quarters an English Ell ; and 3 Quarters make an Ell Flemish.

Of Time.

1 Year hath 365 Days, except a Leap Year, which hath 366 Days, and happens every Fourth Year ; one Day and Night is 24 Hours ; 1 Hour 60 Minutes ; 1 Minute 60 Seconds.

*Thirty Days bath November,
April, June and September ;
February Twenty-eight alone,
And each of the rest Thirty-one.*

Note, Every Leap-Year, February hath twenty-nine Days:

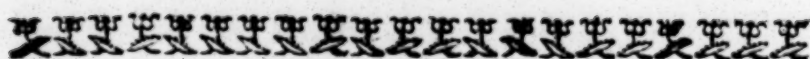
Explanation

Decorative separator line

*Explanation of Marks and Abbreviations of Words
made Use of in this Book.*

l.	-	-	-	Pounds Sterling.
s.	-	-	-	Shillings.
d.	-	-	-	Pence.
Ct.	-	-	-	Hundreds.
lb.	-	-	-	Pounds.
oz.	-	-	-	Ounces.
pw.	-	-	-	Penny-weights.
Gr.	-	-	-	Grains.
hhd.	-	-	-	Hogshead.
gal.	-	-	-	Gallons.
qt.	-	-	-	Containing.
No.	-	-	-	Number.
ps.	-	-	-	Pieces.
wt.	-	-	-	Weight.
pCt.	-	-	-	per Hundred wt.

Decorative separator line



C H A P. I.

Of Notation and Numeration of whole Numbers.

S E C T. I.

NOTATION and NUMERATION teach how to write and value any Number composed of the following Characters, *viz.*

One, Two, Three, Four, Five,

1, 2, 3, 4, 5,

Six, Seven, Eight, Nine, Cypher.

6, 7, 8, 9, 0.

Altho' a Cypher signifieth nothing by itself, yet being set to the Right Hand of any Figure, it increaseth its Value ten Times, and we read thus, *viz.*

Ten, Twenty, Thirty, Forty, Fifty,

10, 20, 30, 40, 50,

Sixty, Seventy, Eighty, &c.

60, 70, 80.

If any two Figures are set together, that which stands to the Right Hand, signifieth only itself, but that which stands to the Left Hand, signifieth its own Value ten Times, and we read thus, *viz.*

Fourteen, Twenty-five, Seventy-eight,

14, 25, 78,

Ninety-two.

92.

If three Figures stand together, that to the Right Hand signifieth itself, the Second, ten Times itself, and the Third, one hundred Times itself, and are read thus, *viz.*

137 One Hundred Thirty Seven,

431 Four Hundred Thirty One,

646 Six Hundred Forty Six,

875 Eight Hundred Seventy Five.

A Number

A Number consisting of 4 Figures, as 4834, is thus read; Four Thousand Eight Hundred Thirty Four. A number of five Figures, as 72368, is read thus; Seventy Two Thousand Three Hundred Sixty Eight.

As for Numbers consisting of more Figures, Observe the follows Table.

1	Unit	—	—	—	1
12	Tens	—	—		10
123	Hundreds	—	—		100
1234	Thousands	—	—		1000
12345	Ten Thousands	—			10000
123456	Hundred Thousands	—			100000
1234567	A Million	—	—		1000000
12345678	Ten Millions	—	—		10000000
123456789	Hundred Millions	—			100000000

— II. —

Questions to exercise Numeration.

How do you put down the following Numbers? viz.

One Hundred and Four	- - - - -	Ans. 104
One Hundred Twenty-three	- - - - -	"
Three Hundred Seventy-five	- - - - -	"
Four Hundred Ninety-one	- - - - -	"
Five Hundred Two	- - - - -	"
Six Hundred Seventy-eight	- - - - -	"
Eight Hundred Nine	- - - - -	"
Nine Hundred Sixty-two	- - - - -	"

— III. —

Of Numbers consisting of Four Figures.

Put down, viz.

One Thousand Two Hundred Thirty-five	
	Answer, 1235
Two Thousand Nine Hundred Seventy	- "
Three Thousand Nine Hundred Eleven	- "
Seven Thousand and Six	- "
	Eight

Eight Thousand Seven Hundred Seven - "
 Five Thousand Seven Hundred Forty-three "
 Nine Thousand Thirty - "
 One Thousand One Hundred Eleven - "
 Two Thousand Seven Hundred Eleven - "

— IV. —

Of Numbers consisting of five Figures.

How do you put down? viz.

Twenty Thousand Three Hundred
 Forty five - - - - - *Answ.* 20345
 Fifty-one Thousand Sixty-seven - - - "
 Sixty Thousand Four Hundred Eighty-
 five - - - - - "
 Seventy Thousand and Twelve - - - "
 Eighty Thousand and Nine - - - "
 Ninety-one Thousand Three Hundred
 Forty-seven. - - - - - "

— V. —

Of Numbers consisting of six Figures.

Write down, viz.

Two Hundred Thirty-four Thousand
 Five Hundred Sixty-seven - - *Answ.* 234567
 Three Hundred Twenty nine Thousand
 Seven Hundred Seventy-nine - - - "
 Seven Hundred Nine Thousand Eight
 Hundred Twelve "
 Four Hundred Seventy-three Thousand
 One Hundred One - - - - - "
 Eight Hundred Nine Thousand Seven-
 teen - - - - - "
 Nine Hundred Eighty-seven Thousand
 Six Hundred Fifty-four. "

— VI. —

Of Numbers consisting of seven Figures.

Put down, viz.

One Million, two Hundred forty seven
Thousand three Hundred fifty-six. *Answ.* 1247356
Three Millions fifty Thousand seven
Hundred eight - - - - - "
Five Millions nine Thousand eight
Hundred four - - - - - "
Nine Millions seven Hundred four
Thousand ninety-three - - - "
Eight Millions five Hundred seventy
Thousand six Hundred ninety-five - "

— VII. —

Of Numbers consisting of 8 Figures.

Put down the following Sums, viz.

Ten Millions three Hundred ninety-
seven Thousand four Hundred fifty-
seven - - - *Answ.* 10397457
Seventy-nine Millions two Hundred
forty Thousand six Hundred - - - "
Fifty-seven Millions eight Thousand
four Hundred thirty-seven - - - "
Sixty-eight Millions nine Hundred
seven Thousand thirty-two - - - "
Forty Millions one Hundred eleven
Thousand one Hundred one - - - "

Put down,

One Hundred twenty-three Millions }
four Hundred fifty-six Thousand }
seven Hundred eighty-nine - }

A D D I T I O N.

C H A P. II.

S E C T. I.

ADDITION teacheth to add two or more Sums together, to make them one Total.

Add the following Sums together, viz.

236	2486	3956	4675	4674
643	2355	7932	8697	7998
457	7667	8360	4309	3975

1336

8963	9658	7539	4268	2823
3008	5732	9731	2646	9008
5769	9601	1579	3520	6524
6843	2367	5137	6482	1218
9017	8254	9795	8264	2627
7503	5378	1793	6428	8344

4830	87698	60312	576895	9768973
2970	69789	70603	79865	8970695
3795	96897	80492	93784	6276942
3962	54328	32109	6789	9756879
9874	30708	9875	3997	3319431
8237	90109	679	985	2137540
784	29890	29	5796	5967389
7963	45687	318	4796	4832518
6475	34567	4587	3210	4839518
328	43576	64338	7826	8763649
987	21484	4828	5937	2198754
974	98036	87630	78989	9763475

The

— II. —

The Use of ADDITION.

1. How much is 1080*l.* 3234*l.* 4283*l.* and 2325*l.* together? *Answ.* 10922*l.*

Example.

£. 1080

3234

4283

2325

Answ. £. 10922

2. A Merchant is indebted to A. 1500*l.* to B. 408*l.* to C. 1310*l.* to D. 50*l.* and to E. 1900*l.* I demand the whole Debt? *Answ.* 5168*l.*

3. A Merchant has received the following Sums, 200*l.* 315*l.* 317*l.* 10*l.* 172*l.* 513*l.* and 9*l.* I demand the total Sum? *Answ.* 1536*l.*

4. A Merchant has bought 7 Casks of Merchandizes, No. 1, weighed 310*lb.* No. 2, 420*lb.* No. 3, 338*lb.* No. 4, 335*lb.* No. 5, 400*lb.* No. 6, 412*lb.* and No. 7, 429*lb.* I demand how many Pounds they weigh together? *Answ.* 2644*lb.*

5. What is the total Weight of these nine Casks of Merchandize, viz. No. 1, 2, 3, weighed each 350*lb.* No. 4, and 5, weighed each 331*lb.* No. 6, weighed 310*lb.* No. 7, 8, and 9, weighed each 342*lb.* *Answ.* 3048*lb.*

6. A Merchant paid the following Sums, 5000*l.* 2040*l.* 1320*l.* 1100*l.* and 9070*l.* I demand the whole Sum? *Answ.* 18530*l.*

7. A Linen Draper sold 10 Pieces of Cloth, the first contained 34 Yards, the second, third, fourth and fifth, contained each 36 Yards. The sixth, seventh and eighth, contained each 33 Yards, and the ninth and tenth Pieces contained each 35 Yards. How many Yards are they together? *Answ.* 347 Yards.

8. A Cashier receives 6 Bags of Money, the first holds 1034*l.* the second 1025*l.* the third 2008*l.* the fourth 7013*l.* the fifth 5075*l.* and the last holds 89*l.* How much is the whole Sum received? *Answ.* 16244*l.*

9. A Vintner buys 6 Pipes of Brandy, containing as follow, viz. 120 Gallons, 118, 125, 121, 127 and 119 Gallons. How many Gallons in the whole? *Answ.* 730 Gallons.

10. What is the total Weight of these seven Casks of Merchandizes, viz. No. 1, weighed 960*lb.* No. 2, 725*lb.* No. 3, 830*lb.* No. 4, 798*lb.* No. 5, 697*lb.* No. 6, 569*lb.* and No. 7, 987*lb.*? *Answ.* 5566*lb.*

11. If for 1 Penny I can buy ten Eggs, how many can I then buy for 40*d.* *Answ.* 400 Eggs.

12. How much is nine Times one Hundred and thirty-five? *Answ.* 1215.

13. A Merchant bought 3 Tons of Butter at 20*l.* per Ton, and 7 Tons of Tallow, at 40*l.* per Ton. How much doth both the Butter and the Tallow come to? *Answ.* 340*l.*

14. How much is 3 Times 9, 4 Times 50, and twice 170*lb.*? *Answ.* 567*lb.*

15. Add 3 Times 303, six Times 909, four Times 505, and five Times 202*lb.* *Ans.* 9393*lb.*

16. If one Ton of Merchandize cost 39*l.* what will twenty Tons come to? *Ans.* 780*l.*

17. Add twice 397, three Times 794, four Times 3176, five Times 15880, six Times 95280, and once 333040. *Ans.* One Million.

18. How many Days are there in a Year, allowing for the Months of April, June, September and November 30 Days each, for February 28, and the other Months each 31 Days. *Ans.* 365 Days.

19. What Day of the Year was the 11th Day of May 1724, it being Leap Year? *Ans.* The 132nd Day.

20. Anno 1715 being a common Year, I demand what Day of that Year the 22nd Day of April was? *Ans.* The 112th Day.

C H A P. III.

MULTIPLICATION.

S E C T. I.

MULTIPLICATION serves instead of many ADDITIONS, and teaches how by two Numbers given to find a third, which shall contain either of the given Terms, so often as the other of them has Units.

MULTIPLICATION TABLE.

2 Times	$\left\{ \begin{array}{l} 2 \text{ are } 4 \\ 3 : 6 \\ 4 : 8 \\ 5 : 10 \\ 6 : 12 \\ 7 : 14 \\ 8 : 16 \\ 9 : 18 \end{array} \right.$	5 Times	$\left\{ \begin{array}{l} 5 \text{ are } 25 \\ 6 : 30 \\ 7 : 35 \\ 8 : 40 \\ 9 : 45 \end{array} \right.$
3 Times	$\left\{ \begin{array}{l} 3 : 9 \\ 4 : 12 \\ 5 : 15 \\ 6 : 18 \\ 7 : 21 \\ 8 : 24 \\ 9 : 27 \end{array} \right.$	6 Times	$\left\{ \begin{array}{l} 6 : 36 \\ 7 : 42 \\ 8 : 48 \\ 9 : 54 \end{array} \right.$
4 Times	$\left\{ \begin{array}{l} 4 : 16 \\ 5 : 20 \\ 6 : 24 \\ 7 : 28 \\ 8 : 32 \\ 9 : 36 \end{array} \right.$	7 Times	$\left\{ \begin{array}{l} 7 : 49 \\ 8 : 56 \\ 9 : 63 \end{array} \right.$
		8 Times	$\left\{ \begin{array}{l} 8 : 64 \\ 9 : 72 \end{array} \right.$
		9 Times	9 : 81

Multiply

Multiplication.

17

Multiply the following Sums, viz.

6298	79659	890659	7998459
by 4	5	6	7
25192			

— II. —

Multiply 65436
by 24

$$\begin{array}{r} 261744 \\ 130872 \\ \hline \end{array}$$

Ans. 1570464

Note, To prove Multiplication, multiply half the Multiplicand by double the Multiplier: Or, half the Multiplier, by double the Multiplicand.

Multiply the following Sums, viz.

479865	9875978	98320064
by 36	76	94

— III. —

Multiply 9832064
by 324

$$\begin{array}{r} 39328256 \\ 19664128 \\ 29496192 \\ \hline \end{array}$$

Ans. 3185588736

B 3

Multiply

*Multiplication.**Multiply the following Sums, viz.*

$$\begin{array}{r} 3987547 \\ \text{by } 716 \\ \hline \end{array}$$

$$\begin{array}{r} 9875496 \\ \text{by } 697 \\ \hline \end{array}$$

$$\begin{array}{r} 4287219 \\ \text{by } 574 \\ \hline \end{array}$$

— IV. —

Multiply 6504039
by 9804

$$\begin{array}{r} 26016156 \\ 520323120 \\ 58536351 \\ \hline \end{array}$$

Answ. 63765598356*Multiply the following Sums, viz.*

$$\begin{array}{r} 63001795 \\ \text{by } 986005 \\ \hline \end{array}$$

$$\begin{array}{r} 94065439 \\ \text{by } 70408 \\ \hline \end{array}$$

$$\begin{array}{r} 54306704 \\ \text{by } 8016079 \\ \hline \end{array}$$

— V. —

*How much is 100 Times 21763 ?**Example.*

$$\begin{array}{r} 21763 \\ \text{by } 100 \\ \hline \end{array}$$

Answ. 2176300*Multiply the following Sums, viz.*

$$\begin{array}{r} 97648 \\ \text{by } 98100 \\ \hline \end{array}$$

$$\begin{array}{r} 38765 \\ \text{by } 725000 \\ \hline \end{array}$$

$$\begin{array}{r} 78452 \\ \text{by } 8790000 \\ \hline \end{array}$$

— VI. —

— VI. —

The Use of MULTIPLICATION.

N O T E.

Of Coin.

{ Pounds multiplied by 20 are Shillings.
Shillings multiplied by 12 are Pence.
Pence multiplied by 4 are Farthings.

Of Avoir-du-
pois Weight.

{ Tuns multiplied by 20 are Hundreds.
Hundreds multiplied by 4 are Quarters.
Quarters multiplied by 28 are Pounds.
Pounds multiplied by 16 are Ounces.
Ounces multiplied by 16 are Drams.

Of Troy
Weight.

{ Pounds Troy multiplied by 12 are Ounces.
Ounces multiplied by 20 are Penny Wts.
Penny Wts. multiplied by 24 are Grains.

Of Liquid
Measure.

{ Tuns multiplied by 4 are Hbds.
Hogsheads multiplied by 63 are Gallons.
Gallons multiplied by 2 are Pottles.
Pottles multiplied by 2 are Quarts.
Quarts multiplied by 2 are Pints.
Pints multiplied by 4 are Noggins.

Of Dry
Measure.

{ Barrels multiplied by 4 are Busbels.
Busbels multiplied by 4 are Pecks.
Pecks multiplied by 2 are Gallons.
Gallons multiplied by 2 are Pottles.

Of Time.

{ Years multiplied by 365 are Days.
Days multiplied by 24 are Hours.
Hours multiplied by 60 are Minutes.
Minutes multiplied by 60 are Seconds.

Of

*Of Long
Measure.*

{ Miles multiplied by 8 are Furlongs.
Furlongs multiplied by 40 are Perches.
Perches multiplied by $16\frac{1}{2}$ are Feet.
Feet multiplied by 12 are Inches.

*Of Apotheca-
ries Weights.*

{ Ounces Troy, multiplied by 8 are Drams.
Drams multiplied by 3 are Scruples.
Scruples multiplied by 20 are Grains.

1. How many Pence in 1944 Shillings ?

Example.

$$\begin{array}{r} 1944 \text{ s.} \\ 12 \\ \hline 3888 \\ 1944 \\ \hline \end{array}$$

Answ. 23328 d.

2. How many Shillings are in 1395 Pounds ?

Answ. 27900 Shillings.

3. In 2480 Pence, how many Farthings ?

Answ. 9920 Farthings.

4. At 4 pence a Penny, how many for Six-pence ? *Answ.* 72.

5. How many Hours are in 365 Days ? *Answ.* 8760 Hours ?

6. In 112 lb. Avoir-du-pois, how many Ounces ? *Answ.* 1792 Ounces.

7. How

7. How much will 245 Tuns of Butter come to at 25*l.* a Tun. *Answ.* 6125*l.*

8. If one Pound of Raisins cost 4 Pence, how much will 112*lb.* cost? *Answ.* 448*d.*

9. How many Minutes are in 24 Hours? *Answ.* 1440 Minutes.

10. In 1440 Minutes how many Seconds? *Answer* 86400 Seconds.

11. If 3 Eggs cost a Half-penny, how many for one Shilling? *Answ.* 72 Eggs.

12. How many Pence are in 100 Cobbs, at 57*d.* each? *Answ.* 5700*d.*

13. In 200 Guineas of 23*s.* each, how many Shillings? *Answ.* 4600*s.*

14. If one Crown is 65*d.* how many Pence are then in 633 Crowns? *Answ.* 41145*d.*

15. How many Gallons are in 264 Hhds. at 63 Gall. per Hhd.? *Answ.* 16632.

— VII. —

16. How many Pence are in 359 *l*.

Example.

$$\begin{array}{r}
 359 \text{ l.} \\
 20 \\
 \hline
 7180 \text{ s.} \\
 12 \\
 \hline
 14360 \\
 7180 \\
 \hline
 \end{array}$$

Answ. 86160 *d.*

17. In 25 Tuns of Brandy, how many Gallons?
Answ. 6300.

18. How many Penny-weights are in 100 *lb*.
Troy? *Answ.* 24000.

19. In twenty Years how many Hours?
Answ. 175200.

20. How many Pence are in 1000 *l*. *Answ.*
240000.

21. In 2986 Shillings how many Farthings?
Answ. 143328.

22. How many Ounces are in 853 *Ct.* Avoir-
du-pois-Weight? *Answ.* 1528576.

— VIII. —

23. How many Quarts are in 70 Tuns of Brandy?

$$\begin{array}{r}
 70 \text{ Tuns} \\
 4 \\
 \hline
 280 \text{ Hhds.} \\
 63 \\
 \hline
 840 \\
 1680 \\
 \hline
 17640 \text{ Gal.} \\
 4 \\
 \hline
 \end{array}$$

Answ. 70560 Quarts.

24. How many Minutes are in 1709 Years?

Answ. 898250400 Minutes.

25. In 978 l. how many Farthings? *Answ.*

938880 Farthings.

26. How many Grains are in 20 lb. of Silver?

Answ. 115200 Grains.

27. In 100 Years how many Seconds? *Answ.*

3153600000 Seconds.

28. How many Farthings are in 897 Guineas

of 23 s. each? *Answ.* 990288.

29. How many Feet are in one Mile? *Answ.*

5280.

30. How

30. How many Feet are there from Dublin to Cork, supposing their Distance 100 Miles?
Answ. 528000 Feet.

31. How many Inches would reach round the Earth, its Circumference being 360 Degrees, and each Degree 60 Miles? *Answ.* 1368576000.

— IX. —

32. How many Pence are in 18*s.* 6*d.* *Answ.* 222 *d.*

$$\begin{array}{r}
 \text{s.} \quad \text{d.} \\
 18 : 6 \\
 12 : \\
 \hline
 42 \\
 18
 \end{array}$$

Answ. 222 *d.*

33. How many Shillings are in 105 *l.* 18 *s.*?
Answ. 2118 *s.*

34. In 7 *l.* 13 *s.* how many Pence? *Answ.* 1836 *d.*

35. How many *lb.* are in 75 *Ct.* 3 *qrs.*? *Answ.* 8484 *lb.*

36. In 145 *Ct.* 2 *qrs.* 25 *lb.* how many *lb.*?
Answ. 16321 *lb.*

37. In one Hundred and seven Pounds Ster. and 11 Pence, how many Pence? *Answ.* 25691 *d.*

38. How many Gallons are in 36 Tuns 3 Hhds. and 27 Gallons? *Answ.* 9288 Gallons.

39. In

39. In 46 Years, 21 Days, 8 Hours, and 59 Minutes, how many Minutes? *Ans.* 24208379.

— X. —

40. How many Pence are in 500 Pistoles of 18 s. and 6d. each.

Example.

	s.	d.
500 at	18	: 6
222	12	
<i>Ans.</i> 111000	42	
	18	
	222 d.	

41. In 609 Pieces of 3s. and $10\frac{1}{2}d.$ how many Half-pence? *Ans.* 56637.

42. How many Half-pence are in 396 Pieces of 4s. $7\frac{1}{2}d.$? *Ans.* 43956.

43. If 1 Piece is 5s. $10\frac{1}{2}d.$ how many Half-pence are there in 896 such Pieces? *Ans.* 126336.

44. How many Pence are in 987 Pieces of 3s. 4d. each? *Ans.* 39480.

45. In One thousand one hundred and eleven Pieces of 3s. $10\frac{1}{2}d.$ how many Half-pence? *Ans.* 103323.

46. How many lb. are in 16 Casks, each 2 Ct. 3 qrs. 14 lb.

C

Example.

*Multiplication.**Example.*

Ct.	qrs.	lb.
2	3	14
4		
	11 qrs.	
	28	
	92	
	23	
	322 lb.	in one Cask
	16	
	1932	
	322	

Ans. 5152 lb.

47. In 24 Bags, each 4 Ct. 1 qrs. 16 lb. how many lb. ? *Ans.* 11808.

48. In 10 Bags, each 300 Crowns, and each Crown 5 s. 5 d. I demand how many Pence ? *Ans.* 195000.

49. In Fifty Heaps of Pistoles, and 20 in a Heap, each Pistole 18 s. 6 d. how many Pence ? *Ans.* 222000.

50. How many Sparrows, 10 for 1 Penny, would pay for an Horse worth 20 l. ? *Ans.* 48000.

C H A P. IV.

S U B T R A C T I O N.

S E C T. I.

SUBTRACTION teacheth to take a lesser Number from a greater, and to know what remains.

From	8103	1969	1917	1540
Take	<u>4193</u>	<u>1408</u>	<u>1718</u>	<u>1400</u>
Remain	<u>3910</u>			
Proof	8103			

From	6119889	4090987	6278505
Take	<u>3599907</u>	<u>1989849</u>	<u>1435040</u>
Remain			
Proof			

From	69740167523	78000330402
Take	<u>23420891075</u>	<u>53298495269</u>
Remain		
Proof		

— II. —

Of COIN.

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
Received	1098	: 19	: 10	979	: 15	: 11
Paid	134	: 15	: 08	200	: 19	: 11
Remain	964	: 04	: 02			
Proof	1098	: 19	: 10			

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
Received	9975	: 02	: 03	8500	: 19	: 07
Paid	7869	: 19	: 11	985	: 18	: 09
Remain						
Proof						

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
Received	1000	: 19	: 09 $\frac{1}{4}$	4351	: 17	: 10 $\frac{1}{2}$
Paid	999	: 09	: 11 $\frac{1}{2}$	2359	: 19	: 11 $\frac{3}{4}$
Remain						
Proof						

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
Received	14932	: 19	: 10	3687	: 16	: 06 $\frac{1}{2}$
Paid	14768	: 17	: 09 $\frac{1}{2}$	1459	: 17	: 07 $\frac{3}{4}$
Remain						
Proof						

— III. —

— III. —

Of AVOIR-DU-POIS WEIGHT.

	<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>		<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>
Bought	200	: 2	: 26		275	: 2	: 15
Sold	99	: 3	: 11		27	: 2	: 07
Remain	100	: 3	: 15				
Proof	200	: 2	: 26				

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>		<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>
Bought	6040	: 1	: 21		1937	: 0	: 0
Sold	1908	: 3	: 27		899	: 3	: 27
Remain							
Proof							

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>		<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>
From	8340	: 2	: 03		9074	: 3	: 25
Take	1090	: 3	: 16		7849	: 1	: 16
Rest							
Proof							

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>Tuns</i>	<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>		<i>Tuns</i>	<i>Ct.</i>	<i>qrs.</i>	<i>lb.</i>
Bought	6904	: 16	: 3	: 11		7650	: 10	: 0	: 13
Sold	987	: 14	: 0	: 27		5879	: 10	: 3	: 25
Remain									
Proof									

— IV. —

Of LIQUID MEASURE.

	<i>Tuns bbd. gal.</i>	<i>Tuns bbd. gal.</i>
Bought	31 : 3 : 15	54 : 0 : 27
Sold	29 : 2 : 26	21 : 3 : 42
Rest	02 : 0 : 52	
Proof	31 : 3 : 15	

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

	<i>Tuns bbd. gal.</i>	<i>Tuns bbd. gal.</i>
Bought	304 : 0 : 54	721 : 1 : 33
Sold	109 : 3 : 54	247 : 2 : 11
Rest		
Proof		

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

— V. —

Of TROY WEIGHT.

	<i>lb. oz. pw. gr.</i>	<i>lb. oz. pw. gr.</i>
Bought	554 : 9 : 19 : 23	946 : 00 : 00 : 01
Sold	97 : 0 : 17 : 15	195 : 11 : 17 : 23
Rest	457 : 9 : 2 : 8	
Proof	554 : 9 : 19 : 23	

	lb.	oz.	pw.	gr.	lb.	oz.	pw.	gr.
Bought	304	11	15	13	917	0	14	09
Sold	196	10	19	21	798	9	18	17
Rest								

Proof



— VI. —

Other Questions proper to this RULE, are such as follow.

1. A Merchant bought 600 salt Ox Hides, weighing 561 Ct. 0 qrs. 2 lb. of which he sells 250 Hides, weighing 239 Ct. 3 qrs. 25 lb. I demand how many Hides he has left, and what they weigh? *Answ.* 350 Hides, weighing 321 Ct. 0 qrs. 5 lb.

Example.

	Hides	Ct.	qrs.	lb.
Bought	600 qt.	561	0	02
Sold	250 qt.	239	3	25
Rest	350 qt.	321	0	05

2. A Shop-keeper bought a Piece of Cloth, qt. 42 Yards, for 22l. 10s. of which he sells 27 Yards for 15l. 15s. I demand how many Yards he has left, and what they stand him in? *Answ.* 15 Yards, and cost him 6l. 15s.

3. What Number is it which being added to 9709, makes 10901? *Answ.* 1192.

4. A Merchant has 209 Casks of Butter, weighing 400 Ct. 2 qrs. 14 lb. ships off 173 Casks of the said Butter, weighing 213 Ct. 2 qrs. 27 lb. I demand how many Casks he has left, and their Weight? *Answ.* 36 Casks qt. 186 Ct. 3 qrs. 15 lb.

5. A Vintner bought 20 Pipes of Brandy, qt. 2459 Gallons, and sells 14 Pipes, qt. 1680 Gallons, how many Pipes and Gallons has he unfold? *Answ.* 6 Pipes, qt. 779 Gallons.

6. A Merchant bought 564 tanned Hides, weighing 16800 lb. sells thereof 260 Hides, Weight 7809 lb. how many Hides has he unfold, and what do they weigh? *Answ.* 304 Hides, qt. 8991 lb.

7. Suppose Cork, Clonmel and Dublin lie in a straight Line, and the Distance between Cork and Dublin is 100 Miles, and from Cork to Clonmel is 30 Miles, I demand the Distance between Clonmel and Dublin? *Answ.* 70 Miles.

8. How long is it since the happy Revolution, which happened in the Year 1688, we are now in the Year 1777? *Answ.* 89 Years.

9. What Time is there between the Eclipse which happened in the Year 1715, the 22d Day of April, 30 Minutes past 7, in the Morning; and the Eclipse which happened in the Year 1724, the 11th of May, at 9 Minutes past 5 in the Afternoon? *Answ.* 9 Years, 20 Days, 9 Hours, 39 Minutes.



C H A P. V.
D I V I S I O N.
S E C T. I.

DIVISION teacheth how often one Number is contained in another, or how to divide a Number, into as many equal Parts as you please.

How often goes 2 into 4398 ? *Answ.* 2199 Times.

Example.

$$\begin{array}{r} 22 \\ 4398 \overline{) 2222} \end{array} \left. \begin{array}{l} 2199 \\ 2 \end{array} \right\}$$

Proof 4398

Divide the following Sums, viz.

80830368 by 3	23343958 by 7
20029292 by 4	99800637 by 8
98763805 by 5	96783904 by 9
23343954 by 6	82045603 by 7

— II. —

How many Times goes 12 into 31589 ? *Answ.* 2632 Times and 5 over.

Example.

Division.

Example.

$$\begin{array}{r}
 782(5 \\
 32889 \\
 12222 \\
 111 \\
 \hline
 5269 \\
 2632 \\
 \hline
 \end{array}
 \left\{ \begin{array}{l} 2632 \text{ and } 5 \text{ over,} \\ 12 \end{array} \right.$$

Proof 31589

Divide the following Sums, viz.

3970478 by 21	8079860 by 54
2725924 by 36	7805438 by 63
6782029 by 48	6758247 by 89
8207603 by 76	1976392 by 82

— III. —

Divide 3185588940 by 324, comes 9832064, and 204 over.

Example.

$$\begin{array}{r}
 22(2 \\
 106208(0 \\
 1693600(4 \\
 3288888940 \\
 32AAAAAAAA \\
 32222222 \\
 \hline
 33333 \quad 39328260 \\
 19664128 \\
 29496194 \\
 \hline
 \end{array}
 \left\{ \begin{array}{l} 9832064 \\ 324 \end{array} \right.$$

Proof 3185588940

Divide the following Sums, viz.

87245229 by 432	9450673 by 793
86090645 by 592	2597906 by 967
33390373 by 797	9760965 by 796

Division.

35

653096439	by 7627		274109370	by 69327
269272099	by 7436		906790422	by 64369
903606321	by 5996		490222492	by 73223

— IV. —

Divide 36754 by 100.

Example.

367(54 { 367 and 54 over.
~~21100~~

Divide the following Sums, viz.

2309723	by 2000		3222200	by 1000
9060392	by 3000		2396027	by 7000
6904026	by 5000		1324902	by 9000

— V. —

The Use of DIVISION.

Of Coin. { NOTE, Farthings divided by 4 are Pence.
Pence divided by 12 are Shillings.
Shillings divided by 20 are Pounds.

Of Troy Weight. { Grains Troy divided by 24 are Penny Wts.
Penny Wts. divided by 20 are Ounces.
Ounces divided by 12 are Pounds.

Of Avoir-du-pois Weight. { Drams Avoir-du-pois divided by 16 are Ounces.
Ounces divided by 16 are Pounds.
Pounds divided by 28 are Quarters.
Quarters divided by 4 are Hundreds.
Hundreds divided by 20 are Tuns.

Of Dry Measure. { Pints divided by 2 are Quarts.
Quarts divided by 2 are Pottles.
Pottles divided by 2 are Gallons.
Gallons divided by 2 are Pecks.
Pecks divided by 4 are Bushels.
Bushels divided by 4 are Barrels.

Of

Of Apothecaries Weights.

Grains Troy divided by 20 are Scruples.
 Scruples divided by 3 are Drams.
 Drams divided by 8 are Ounces.
 Ounces divided by 12 are Pounds.

Of Liquid Measure.

Noggins divided by 4 are Pints.
 Pints divided by 2 are Quarts.
 Quarts divided by 2 are Pottles.
 Pottles divided by 2 are Gallons.
 Gallons divided by 63 are Hbds.
 Hbds. divided by 4 are Tuns.

Of Time.

Seconds divided by 60 are Minutes.
 Minutes divided by 60 are Hours.
 Hours divided by 24 are Days.
 Days divided by 365 are Years.

1. How many Pence are in 1008 Farthings?
Answ. 252 Pence.

Example.

$$\begin{array}{r} 2 \\ 2008 \\ \text{AAA} \end{array} \left\{ \begin{array}{l} 252 \end{array} \right.$$

2. How many Shillings are in 7776 Pence?
Answ. 648 Shillings.

3. In 109080 Shillings, how many Pounds Sterling? *Answ.* 5454 l.

4. How many Crowns are in 12111 Pence, each Crown at 65 Pence? *Answ.* 186 Crowns, and 21d.

5. In 85400 Pence, how many Ducatoons of 72d. each? *Answ.* 1186 Ducatoons and 8d. over.

6. How many Guineas of 23s. each, could one have for 1009800 Shillings? *Answ.* 43904 Guineas, and 8s. over.

7. In

7. In 107520 Ounces of Avoirdupois Weight, how many *lb*? *Answ.* 6720 *lb*.

8. How many Pounds are in 20196 Ounces Troy Weight? *Answ.* 1683 *lb*.

9. In 20658 Gallons, how many Hogheads? *Answ.* 327 Hogheads, and 57 Gallons over.

10. How many Days are in 8760 Hours? *Answ.* 365 Days.

11. How many Cobs of 57*d*. each, are equal to 57000*d*.? *Answ.* 1000.

— VI. —

12. In 16320 *lb*. of Beef, how many Hundred Weight? *Answ.* 145 *Ct.* 2*qrs.* 24 *lb*.

$$\begin{array}{r}
 \begin{array}{r}
 (2 \\
 238(4 \\
 16320 \\
 2882 \\
 22
 \end{array}
 \left\{
 \begin{array}{r}
 22(2 \\
 888 \\
 AAA
 \end{array}
 \right.
 \left\{
 \begin{array}{r}
 \text{Ct.} \quad \text{qrs.} \quad \text{lb.} \\
 145 : 2 : 24
 \end{array}
 \right.
 \end{array}$$

13. How many Pounds Sterling are in 86248 Pence? *Answ.* 359*l.* 7*s.* 4*d*.

14. How many Tuns of Wine are in 6965 Gallons? *Answ.* 27 Tuns, 2 Hogheads, and 35 Gallons.

15. In 340480 Ounces of Avoirdupois, how many Hundred Weight? *Answ.* 190 *Ct*.

16. How many Years are in 175280 Hours? *Answ.* 20 Years, 3 Days, 8 Hours.

17. In 115200 Grains, how many *lb*. Troy Weight? *Answ.* 20 *lb*.

— VII. —

18. If 1 Yard of Cloth cost 5s. how many Yards can I buy then for 7500s. ? *Answ.* 1500 Yards.

Example.

$$\begin{array}{r} 2 \\ 7800 \\ 8888 \end{array} \left. \vphantom{\begin{array}{r} 2 \\ 7800 \\ 8888 \end{array}} \right\} 1500$$

19. If 1500 Yards of Cloth cost 7500s. what costs one Yard ? *Answ.* 5s.

20. How many Tuns of Brandy can be bought for 2880l. at 60l. the Tun ? *Answ.* 48 Tuns.

21. If a Journey-man earns 520s. in a Year, how much is it a Week ? *Answ.* 10s.

22. How many Hogheads of Wine can I buy for 972l. if one Hhd. cost 9l. ? *Answ.* 108 Hhds.

23. If 108 Hogheads of Wine cost 972l. what will one Hhd. come to ? *Answ.* 9l.

24. If in one Week I spend 9s. in what Time can I spend 468s. ? *Answ.* in 52 Weeks.

25. How much is a Tun of Tallow worth, if 294 Tuns cost 8526l. ? *Answ.* 29l.

— VIII. —

26. If 3024l. were to be divided between 5 Persons, what will each Man's Share be ? *Answ.* 604l. 16s.

Example.

$$\begin{array}{r} (4 \\ 3024 \\ 888 \end{array} \left. \vphantom{\begin{array}{r} (4 \\ 3024 \\ 888 \end{array}} \right\} 604l. \text{ and } 4 \text{ over.}$$

$$\begin{array}{r} 80 \\ 88 \end{array} \left. \vphantom{\begin{array}{r} 80 \\ 88 \end{array}} \right\} 16s.$$

27 Sup-

27. Suppose 1406*l.* were to be divided between 8 Persons, what would each Man's Part be? *Answ.* 175*l.* 15*s.*

28. Divide 622*l.* between 6 Persons, and it comes to 103*l.* 13*s.* 4*d.* for each.

29. What is each Man's Share, if 270*l.* were to be divided between 8 Persons? *Answ.* 33*l.* 15*s.*

30. Divide 1224*l.* between 320 Men, and it comes to 3*l.* 16*s.* 6*d.* each.

31. Divide 3*l.* between 16 Persons, and how much does it come to for each? *Answ.* 3*s.* 9*d.*



C H A P. VI.

ADDITION OF COIN.

S E C T. I.

<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
710	: 11	: 06	516	: 14	: 08
612	: 14	: 03	724	: 17	: 09
419	: 15	: 07	319	: 18	: 06
1743	: 01	: 04			

Addition of Coin.

<i>l.</i>	<i>s.</i>	<i>d.</i>
206	: 02	: 08
1090	: 02	: 08
984	: 12	: 03
442	: 13	: 09
663	: 11	: 09

<i>l.</i>	<i>s.</i>	<i>d.</i>
1234	: 03	: 01
127	: 19	: 11
371	: 14	: 03
1028	: 17	: 09
799	: 17	: 06

<i>l.</i>	<i>s.</i>	<i>d.</i>
135	: 17	: 07
193	: 10	: 11
1213	: 13	: 00
319	: 19	: 37
1800	: 04	: 11
99	: 16	: 06
118	: 09	: 09
976	: 13	: 10
549	: 12	: 06

<i>l.</i>	<i>s.</i>	<i>d.</i>
943	: 10	: 07
28	: 11	: 06
308	: 18	: 04
1008	: 11	: 04
153	: 12	: 09
383	: 13	: 07
1009	: 14	: 06
935	: 13	: 09
796	: 17	: 06

<i>l.</i>	<i>s.</i>	<i>d.</i>
999	: 18	: 01
808	: 17	: 10
777	: 18	: 01
666	: 16	: 09
555	: 15	: 08
677	: 13	: 07
333	: 12	: 06
738	: 11	: 05
313	: 10	: 01
331	: 19	: 03
113	: 17	: 01
174	: 13	: 10
751	: 12	: 09

<i>l.</i>	<i>s.</i>	<i>d.</i>
1779	: 18	: 01
808	: 19	: 11
909	: 16	: 11
1851	: 17	: 10
765	: 17	: 02
983	: 10	: 04
1899	: 11	: 05
651	: 13	: 04
1351	: 15	: 08
235	: 16	: 06
1065	: 12	: 03
932	: 13	: 02
1166	: 14	: 08

Addition of Coin.

41

<i>l.</i>	<i>s.</i>	<i>d.</i>
965	: 19	: 11
876	: 17	: 09
742	: 10	: 01
967	: 19	: 10
435	: 14	: 11

<i>l.</i>	<i>s.</i>	<i>d.</i>
698	: 18	: 02
873	: 01	: 09
175	: 12	: 03
789	: 14	: 06
969	: 10	: 06

<i>l.</i>	<i>s.</i>	<i>d.</i>
875	: 18	: $06\frac{1}{2}$
1020	: 17	: 08
781	: 12	: $08\frac{3}{4}$
897	: 18	: 10
1758	: 15	: $08\frac{1}{4}$
585	: 10	: 10
1679	: 14	: $10\frac{1}{2}$
899	: 17	: 07
1099	: 16	: $09\frac{3}{4}$

<i>l.</i>	<i>s.</i>	<i>d.</i>
1007	: 17	: $07\frac{1}{2}$
482	: 19	: 08
1829	: 17	: $10\frac{3}{4}$
996	: 15	: 08
2534	: 18	: $05\frac{1}{2}$
724	: 14	: 04
1654	: 11	: $04\frac{3}{4}$
607	: 14	: 03
1596	: 14	: $07\frac{1}{2}$

<i>l.</i>	<i>s.</i>	<i>d.</i>
1695	: 18	: 08
4304	: 17	: 09
3957	: 10	: 11
3169	: 16	: 02
6901	: 16	: 02
6396	: 10	: 09
9850	: 13	: 10
2096	: 10	: 06
3329	: 19	: 06
3985	: 04	: 02
6302	: 16	: 10
9108	: 19	: 09
2399	: 19	: 09
6654	: 12	: 09

<i>l.</i>	<i>s.</i>	<i>d.</i>
9790	: 17	: $10\frac{1}{4}$
7549	: 18	: 07
9054	: 15	: $10\frac{1}{2}$
9162	: 09	: 09
9962	: 12	: $03\frac{1}{4}$
2609	: 10	: 06
3796	: 14	: $06\frac{3}{4}$
6984	: 15	: $06\frac{1}{2}$
9865	: 07	: 10
7996	: 16	: 04
6923	: 18	: $06\frac{1}{2}$
9162	: 15	: 01
6307	: 19	: $10\frac{1}{4}$
1399	: 17	: 11

<i>l.</i>	<i>s.</i>	<i>d.</i>
1036821	: 15	: $11\frac{1}{2}$
10920	: 17	: 04
1032	: 19	: $08\frac{3}{4}$
50233	: 16	: $04\frac{1}{2}$
1006	: 13	: 02
102021	: 17	: $04\frac{1}{4}$
2071099	: 18	: 10
104	: 12	: $06\frac{1}{4}$
503019	: 08	: $00\frac{1}{4}$
50017	: 15	: 02
1188	: 10	: 03
106	: 18	: $06\frac{1}{2}$
9886	: 17	: 11
50099	: 03	: $08\frac{1}{4}$
170066	: 18	: 02
11277	: 17	: $06\frac{3}{4}$
5006	: 08	: $08\frac{1}{4}$
4117	: 05	: 04
2239	: 03	: $10\frac{3}{4}$
44202	: 15	: 09
3222	: 12	: $07\frac{1}{2}$
172310	: 16	: 06
16230	: 17	: 03
1726	: 15	: 10
14	: 13	: $05\frac{1}{4}$
200924	: 18	: 08

<i>l.</i>	<i>s.</i>	<i>d.</i>
18101035	: 15	: 04
15173260	: 18	: $03\frac{1}{4}$
17121960	: 14	: 06
1218130	: 18	: $06\frac{1}{4}$
154188	: 13	: $07\frac{3}{4}$
176099	: 09	: 11
136933	: 17	: $10\frac{3}{4}$
121966	: 14	: 05
13083	: 02	: $07\frac{1}{4}$
13669	: 12	: $08\frac{1}{2}$
27333	: 13	: 04
17631	: 19	: $08\frac{3}{4}$
23732	: 18	: $06\frac{1}{2}$
3217	: 12	: 08
13699	: 12	: $04\frac{1}{4}$
1832999	: 17	: 02
499	: 06	: $05\frac{1}{4}$
1783	: 13	: 07
18925	: 19	: $10\frac{1}{2}$
174320	: 09	: 05
832192	: 13	: $07\frac{1}{2}$
282	: 09	: $09\frac{1}{4}$
1826	: 06	: 07
32105	: 08	: $11\frac{3}{4}$
32005	: 09	: $09\frac{1}{2}$
1033209	: 16	: $03\frac{1}{2}$

Addition of Avoirdupois Weight.

43

II.

By Avoirdupois Weight are commonly weighed Butter, Tallow, Iron, Lead, Wool, Tobacco, and all Sorts of Grocery Wares, whence there may issue a Waste.

Ct. qrs. lb.

942 : 2 : 11

386 : 3 : 25

579 : 2 : 27

421 : 3 : 19

784 : 1 : 26

234 : 2 : 09

492 : 1 : 07

944 : 3 : 19

193 : 2 : 24

619 : 0 : 14

Ct. qrs. lb.

184 : 3 : 22

745 : 2 : 27

943 : 3 : 25

428 : 0 : 24

109 : 2 : 23

412 : 1 : 25

145 : 3 : 20

864 : 0 : 14

419 : 1 : 18

289 : 1 : 19

Ct. qrs. lb.

491 : 2 : 19

642 : 0 : 04

121 : 1 : 10

945 : 0 : 16

196 : 2 : 25

694 : 0 : 10

409 : 2 : 11

189 : 0 : 14

914 : 2 : 18

Ct. qrs. lb.

649 : 1 : 14

464 : 0 : 09

168 : 2 : 16

914 : 2 : 24

149 : 0 : 19

946 : 2 : 17

514 : 0 : 10

495 : 2 : 24

189 : 1 : 18

Ct. qrs. lb.

791 : 3 : 27

801 : 1 : 24

647 : 3 : 10

109 : 0 : 19

456 : 1 : 23

990 : 3 : 18

785 : 1 : 27

Ct. qrs. lb.

805 : 3 : 21

921 : 1 : 18

810 : 0 : 10

167 : 3 : 24

780 : 2 : 11

456 : 0 : 19

822 : 2 : 24

Ct.

44 *Addition of Avoirdupois Weight.*

Ct.	qrs.	lb.
567	: 0	: 22
345	: 0	: 17
234	: 2	: 21
621	: 0	: 25
789	: 3	: 10
908	: 1	: 16
457	: 0	: 24

Ct.	qrs.	lb.
890	: 0	: 18
802	: 2	: 22
987	: 0	: 24
893	: 2	: 10
939	: 3	: 21
456	: 1	: 25
319	: 0	: 16

Ct.	qrs.	lb.
1890	: 0	: 18
908	: 2	: 24
1367	: 1	: 26
890	: 3	: 00
1067	: 0	: 23
986	: 2	: 10
1609	: 3	: 10

Ct.	qrs.	lb.
1907	: 2	: 21
985	: 0	: 24
1567	: 2	: 26
457	: 0	: 05
1096	: 1	: 00
805	: 2	: 23
1890	: 0	: 06

Tuns	Ct.	qrs.	lb.
184	: 09	: 1	: 19
495	: 19	: 2	: 24
514	: 14	: 1	: 10
946	: 12	: 2	: 17
149	: 19	: 0	: 19
198	: 14	: 2	: 16
945	: 18	: 0	: 16

Tuns	Ct.	qrs.	lb.
914	: 18	: 2	: 18
198	: 16	: 0	: 14
409	: 19	: 2	: 18
694	: 13	: 0	: 19
914	: 14	: 1	: 24
196	: 09	: 2	: 25
121	: 19	: 1	: 10

— III. —

Of Troy Weight.

By Troy Weight are weighed Gold, Silver, Pearls, precious Stones, and Medicines.

lb.	oz.	pwt.	gr.
898	: 10	: 15	: 15
834	: 09	: 13	: 04
284	: 11	: 07	: 22
439	: 10	: 10	: 12
646	: 11	: 08	: 21

lb.	oz.	pwt.	gr.
439	: 09	: 18	: 20
946	: 11	: 09	: 19
409	: 08	: 18	: 04
981	: 11	: 16	: 13
981	: 11	: 14	: 14

lb.	oz.	pwt.	gr.
109	: 02	: 02	: 23
943	: 11	: 03	: 20
184	: 10	: 13	: 20
784	: 08	: 01	: 21
579	: 02	: 11	: 23
943	: 02	: 11	: 18

lb.	oz.	pwt.	gr.
428	: 09	: 06	: 22
745	: 11	: 11	: 12
412	: 12	: 19	: 22
421	: 03	: 15	: 23
386	: 10	: 12	: 22
234	: 02	: 09	: 20

— IV. —

Of Wine Measure.

Tuns.	Hbd.	Gal.
31	: 1	: 09
42	: 3	: 06
84	: 2	: 36
90	: 0	: 08
62	: 2	: 38

Tuns.	Hbd.	Gal.
79	: 1	: 06
28	: 3	: 09
37	: 1	: 43
72	: 0	: 11
74	: 3	: 38

— V. —

Addition of Coin.— V. —*Of Cloth Measure.*

<i>Yds.</i>	<i>Q.</i>	<i>Na.</i>
43	: 1	: 02
96	: 0	: 01
74	: 1	: 00
96	: 1	: 01
87	: 3	: 02

<i>Yds.</i>	<i>Q.</i>	<i>Na.</i>
96	: 1	: 00
89	: 3	: 02
75	: 1	: 03
87	: 0	: 01
98	: 1	: 02

— VI. —*Of Time.*

<i>Ys.</i>	<i>Ds.</i>	<i>Hs.</i>	<i>Mi.</i>
31	: 194	: 19	: 53
90	: 234	: 23	: 44
43	: 318	: 16	: 31
19	: 145	: 07	: 03
51	: 141	: 06	: 34

<i>Ys.</i>	<i>Ds.</i>	<i>Hs.</i>	<i>Mi.</i>
69	: 192	: 10	: 54
40	: 345	: 05	: 06
24	: 176	: 09	: 40
12	: 146	: 08	: 14
46	: 329	: 21	: 23

C H A P. VII

REDUCTION OF COIN.

S E C T. I.

To Reduce Foreign and English Coin into Pounds Sterling.

The Rule.

MULTIPLY the given Number of Pieces by the Shillings, Pence or Halfpence, &c. that are in one Piece. Then bring the Product into Pounds Sterling by the foregoing Examples in Division.

Example.

1. How many *l.* Sterling are in 1567 Crowns each 5*s.* 5*d.*? *Ans.* 424*l.* 7*s.* 11*d.*

1567 at 5 <i>s.</i> 5 <i>d.</i>	
$ \begin{array}{r} 65 \quad 12 \\ \hline 7835 \quad 65 \\ 9402 \\ \hline 101855 \end{array} $	$ \begin{array}{r} 2 \quad (1 \\ 809(1 \\ 201888 \\ 22222 \\ 222 \\ \hline 84817 \\ \hline 424l. 7s. 11d. \end{array} $

2. In 3695 Pistoles of 18*s.* 6*d.* each, how many *l.* Sterling? *Ans.* 3417*l.* 17*s.* 6*d.*

3. How many *l.* are in 1260 Ducatoons of 6*s.* each? *Ans.* 378*l.*

4. How many *l.* are in 3250 Guineas of 23*s.* each? *Ans.* 3737*l.* 10*s.*

5. In

5. In 9056 Cobs of 4s. 9d. each, how many l. ?
Answ. 2150l. 16s.

6. How many l. are in 5789 Crowns of 5s. 5d. ?
 each ? *Answ.* 1567l. 17s. 1d.

7. In 6954 Pieces of 5s. 10½d. how many l. ?
Answ. 2042l. 14s. 9d.

8. How many l. are in 46080 Pieces of 13d. ?
Answ. 2496d.

9. In 1090 Moidores of 30s. each, how many l. ?
Answ. 1635l.

10. How many l. are in 1000 Pieces of 6½d.
 each ? *Answ.* 27l. 1s. 8d.

11. In 10960 Groats how many l. Sterling ?
Answ. 182l. 13s. 4d.

12. How many l. are in 1094 Crowns of 58½d.
 each ? *Answ.* 267l. 16s. 0½d.

13. In 954 Moidores of 29s. 10d. how many
 l. *Answ.* 1423l. 1s.

14. How many l. are in 478 Pistoles of 18s. 4d.
 each ? *Answ.* 438l. 3s. 4d.

— II. —

To reduce Pounds Sterling, into Foreign and
 English Coin.

Rule.

*Reduce the given Pounds Sterling, and the given
 Coin into one Name, then divide one by the other, and
 the Quotient is the Answer required.*

Example.

Example.

15. A Merchant is to pay 3737*l.* 10*s.* With how many Guineas of 23*s.* each can he do it?
Answ. 3250 Guineas.

$$\begin{array}{r}
 3737\text{ l. } 10\text{ s. } 2 \\
 \underline{20} \quad 82 \\
 74780 \\
 74750 \quad 23333 \\
 \quad \quad 222
 \end{array}
 \left. \vphantom{\begin{array}{r} 3737\text{ l. } 10\text{ s. } 2 \\ 20 \\ 74780 \\ 74750 \end{array}} \right\} 3250 \text{ Guineas.}$$

16. With how many Ducatoons of 6*s.* each could I pay 378*l.*? *Answ.* 1260.

17. In 3417*l.* 17*s.* 6*d.* how many Pistoles of 18*s.* 6*d.* each? *Answ.* 3695.

18. I demand how many Crowns of 5*s.* 5*d.* per Piece are equal to 1567*l.* 17*s.* 1*d.*? *Answ.* 5789.

19. With how many Crusadoes of 3*s.* 2*d.* per Piece could I pay 1093*l.* 2*s.* 8*d.*? *Answ.* 6904.

20. A Merchant is to pay 2042*l.* 14*s.* 9*d.* I demand with how many Ducatoons of 5*s.* 10½*d.* can he pay it? *Answ.* 6954.

21. How many Pieces of 13*d.* are equal to 2496*l.*? *Answ.* 46080.

22. In 27*l.* 1*s.* 8*d.* how many Pieces of 6½*d.*? *Answ.* 1000.

23. With how many Moidores of 30*s.* per Piece can one pay 1635*l.*? *Answ.* 1090.

24. How many Pistoles of 18*s.* 6*d.* will be wanted to pay 162*l.* 17*s.* 6*d.*? *Answ.* 176 Pistoles and 1*s.* 6*d.*

25. In 1000*l.* how many Moidores of 2*g*s. 10*d.* per Piece? *Answ.* 670 Moidores, and 11*s.* 8*d.*

— III. —

To reduce one Kind of Coin into another Kind of Coin.

Rule.

Bring both Coins into the same Denomination, and the Products divide by one another.

26. How many Crowns of 5*s.* 5*d.* per Piece are equal to 19045 Cobs of 4*s.* 9*d.* per Piece. *Answ.* 16701.

19045 of 4 <i>s.</i> 9 <i>d.</i>	5 <i>s.</i> 5 <i>d.</i>	
57 12	12	
133315 57	65	
95225		
1085565		
	4	
	433	
	2088865	}
	688888	
	6666	

27. How many Pistoles of 18*s.* 6*d.* per Piece are contained in 1001 Crowns of 5*s.* 5*d.* per Piece? *Answ.* 293 Pistoles and 1*s.* 7*d.*

28. In 16701 Crowns of 5*s.* 5*d.* each, how many Cobs of 4*s.* 9*d.* each? *Answ.* 19045.

29. How many Crowns of 5*s.* 5*d.* each are in 976 Pistoles of 18*s.* 6*d.* each? *Answ.* 3333 Crowns, and 2*s.* 3*d.*

30. How

Reduction of Coin.

5f

30. How many Guineas of 23s. per Piece are worth 1984 Moidores of 30s. each? *Answ.* 2587 Guineas, and 19s.

31. In 10000 Pieces of 13d. how many Crowns of 5s. 5d. *Answ.* 2000.

32. How many Crowns of 5s. 5d. are equal to 20000 Pieces of 6½d. *Answ.* 2000.

33. How many Cobs of 4s. 7d.½ per Piece are worth 564 Ducatoons of 5s. 10d.½ per Piece? *Answ.* 716 Cobs, and 2s.

34. A Merchant has a certain Quantity of Crowns of 5s. 5d. each, which he changes with a Cashier for Guineas of 23s. per Piece, and receives of him 1000 Guineas. I demand how many Crowns the Merchant had? *Answ.* 4246 Crowns, and 10d.

— IV. —

35. A Merchant receives the following different Species. I demand how many Pounds Sterling they make? *viz.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
467 at 5s. 5d. - - - - -	"		
942 at 4s. 9d. - - - - -	"		
120 at 18s. 6d. - - - - -	"		

Answ. £. 461 : 4 : 1

36. Received of A — B — 1. 582 : 14 : 8 on Account, or in Part Payment, of 500 Casks of Butter fold him, *viz.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
709 at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
296 at 4 <i>s.</i> 9 <i>d.</i> - - - - -	"		
201 at 2 <i>s.</i> - - - - -	"		
96½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		

Ans^w. £. 582 : 14 : 8

37. Paid M — D — *l.* 534 : 19 : 10 in Part
Payment of 30 Tuns of Tallow bought of him, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
150 at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
85½ at 23 <i>s.</i> - - - - -	"		
1100 at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		

Ans^w. £. 534 : 19 : 10

38. Received of C — H — *l.* 411 : 17 : 11½ in
full for Balance of all Accounts to this Day, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
50 at 5 <i>s.</i> 10½ <i>d.</i> - - - - -	"		
103 at 3 <i>s.</i> 10½ <i>d.</i> - - - - -	"		
205 at 3 <i>s.</i> 2 <i>d.</i> - - - - -	"		
219 at 3 <i>s.</i> 4 <i>d.</i> - - - - -	"		
1000 at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
40½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		

Ans^w. £. 411 : 17 : 11½

39. Paid S — T — 200*l.* 19*s.* 2*d.* in Part
Payment of 300 tanned Hides bought of him, viz.
100

	<i>l.</i>	<i>s.</i>	<i>d.</i>
100 at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
50 at 23 <i>s.</i> - - - - -	"		
80 at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
70 at 6 <i>s.</i> - - - - -	"		
90 at 4 <i>s.</i> 9 <i>d.</i> - - - - -	"		

£. 200 : 19 : 2

40. Received of J — J — 270*l.* for my Bill on J — E — of London, for 250*l.* at 8 per Ct. viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
100 at 23 <i>s.</i> - - - - -	"		
95½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
75½ at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
94 at 5 <i>s.</i> 10½ <i>d.</i> - - - - -	"		
300 at 1 <i>s.</i> 1 <i>d.</i> - - - - -	"		
2 at 23 <i>s.</i> - - - - -	"		
In Brass, 1 <i>s.</i> 0½ <i>d.</i> - - - - -	"		

£. 270 : 0 : 0

41. Paid G — F — 261*l.* 5*s.* 4½*d.* in Part of 1500 Stone of Wool bought of him, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
300 at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
100 at 6 <i>s.</i> - - - - -	"		
150½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
199½ at 13 <i>d.</i> - - - - -	"		

£. 261 : 5 : 4½

42. Paid P — P — on Account of 100 Kilderkins of Wheat bought of him, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
931½ at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
314½ at 4 <i>s.</i> 9 <i>d.</i> - - - - -	"		
72½ at 30 <i>s.</i> - - - - -	"		
94 at 29 <i>s.</i> 10 <i>d.</i> - - - - -	"		
27½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
30 at 18 <i>s.</i> 2 <i>d.</i> - - - - -	"		
27 at 6½ <i>d.</i> - - - - -	"		

£. 629 : 7 : 2½

43. Received of R — F — by Order, and for
Account of S — S —, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
1036½ at 13 <i>d.</i> - - - - -	"		
931 at 3 <i>s.</i> 4 <i>d.</i> - - - - -	"		
97 at 29 <i>s.</i> 8 <i>d.</i> - - - - -	"		
104 at 29 <i>s.</i> 6 <i>d.</i> - - - - -	"		
58 at 18 <i>s.</i> 4 <i>d.</i> - - - - -	"		
275½ at 18 <i>s.</i> 6 <i>d.</i> - - - - -	"		
431½ at 23 <i>s.</i> - - - - -	"		
57½ at 30 <i>s.</i> - - - - -	"		

£. 1399 : 1 : 5½

44. Paid B — B — in full of all Accounts, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
100 at 29 <i>s.</i> 10 <i>d.</i> - - - - -	"		
256 at 29 <i>s.</i> 8 <i>d.</i> - - - - -	"		
75 at 18 <i>s.</i> 4 <i>d.</i> - - - - -	"		
159 at 18 <i>s.</i> 2 <i>d.</i> - - - - -	"		
2036½ at 5 <i>s.</i> 5 <i>d.</i> - - - - -	"		
457½ at 6 <i>s.</i> - - - - -	"		
694½ at 4 <i>s.</i> 9 <i>d.</i> - - - - -	"		
96 at 4 <i>s.</i> 7½ <i>d.</i> - - - - -	"		
103 at 5 <i>s.</i> 10½ <i>d.</i> - - - - -	"		

£. 1648 : 5 : 6½

45. Paid

Reduction of Coin.

55

45. Paid W — H — for my Cash Note, (No. 129) taken up, viz.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
23 at 80s.	-	-	-
13 at 79s. 8d.	-	-	-
36 at 79s. 10d.	-	-	-
24 at 79s. 6d.	-	-	-
29 at 40s.	-	-	-
16 at 39s. 10d.	-	-	-
19 at 39s. 8d.	-	-	-
11 at 39s. 6d.	-	-	-
39 at 20s.	-	-	-
27 at 19s. 10d.	-	-	-
25 at 19s. 8d.	-	-	-
20 at 30s.	-	-	-
10 at 29s. 10d.	-	-	-
14 at 29s. 8d.	-	-	-
7 at 29s. 6d.	-	-	-
5 at 23s.	-	-	-
17 at 15s.	-	-	-
4 at 14s. 8d.	-	-	-
7 at 10s.	-	-	-
3 at 9s. 10d.	-	-	-
2 at 9s. 8d.	-	-	-
5 at 9s. 3d.	-	-	-
3 at 11s. 6d.	-	-	-
19 at 5s.	-	-	-
26½ at 5s. 5d.	-	-	-
32 at 5s. 6d.	-	-	-

£. 750 : 13 : 3½

46. Received

46. Received of J — D — 327 *l.* for my Bill for 300 *l.* English, which I have drawn on C — B — for his Account at 9 per Ct. *viz.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
13 at 77 <i>s.</i> 8 <i>d.</i>	-	-	- 39
25 at 77 <i>s.</i> 6 <i>d.</i>	-	-	- 39
14 at 38 <i>s.</i> 10 <i>d.</i>	-	-	- 39
29 at 19 <i>s.</i> 6 <i>d.</i>	-	-	- 39
27 at 19 <i>s.</i> 4 <i>d.</i>	-	-	- 39
20 at 22 <i>s.</i> 9 <i>d.</i>	-	-	- 39
7 at 29 <i>s.</i> 3 <i>d.</i>	-	-	- 39
9 at 29 <i>s.</i> 1 <i>d.</i>	-	-	- 39
16 at 28 <i>s.</i> 11 <i>d.</i>	-	-	- 39
26 at 18 <i>s.</i> 3 <i>d.</i>	-	-	- 39
1 at 22 <i>s.</i> 9 <i>d.</i>	-	-	- 39
3 at 9 <i>s.</i> 10 <i>d.</i>	-	-	- 39
2 at 9 <i>s.</i> 8 <i>d.</i>	-	-	- 39
1 at 9 <i>s.</i> 2 <i>d.</i>	-	-	- 39
1 at 9 <i>s.</i>	-	-	- 39
2 at 4 <i>s.</i> 11 <i>d.</i>	-	-	- 39
1 at 4 <i>s.</i> 9 <i>d.</i>	-	-	- 39

Returned - - - - -

£. 327 : 1 : 4
000 : 1 : 4

£. 327 : 0 : 0

C H A P. VIII.

THE RULE OF THREE DIRECT.

S E C T. I.

THE Rule of Three teacheth by three Numbers given to find out a fourth, which shall bear such Proportion to the Second, as the Third doth to the First.

Rule.

In stating the Question, your first and third Numbers must be of one Name, and if they are not so, reduce them to it. If the middle Number (which always differs in Name from the third) has more than one Denomination, reduce it to the lowest mentioned. Then multiply the second and third Numbers together, and the Produce divide by the first Number, the Quotient of that Division will be the Answer, in the same Name as the middle Number was reduced to.

Note, 1. *The first Number is always known by the Words if, or at, and the third Number is known by the Words how much, or what will.*

Note, 2. *When the first Number is an Unit, the Answer is found by Multiplication only. When the second or third Number is an Unit, the Answer will be found by Division only.*

1. If one Yard of Cloth cost 4s. what will 25 Yards cost? *Ans.* 5l.

 *Example.*

Example.

$$\begin{array}{rcl}
 \text{Td.} & \text{s.} & \text{Td.} \\
 1 & \text{---} 4 & \text{---} 25 \\
 & & 4 \\
 & & \text{---} \\
 & & 10 \mid 0 \\
 & & \text{---}
 \end{array}$$

Answ. 5*l*.

2. If 1*lb*. of Sugar cost 8*d*. what will 112*lb*. come to ? Answ. 3*l*. 14*s*. 8*d*.

3. What will 17 Tuns of Tallow come to, at 25*l*. the Tun ? Answ. 425*l*.

4. If one Piece of Silk cost 27*l*. how much will 50 Pieces cost ? Answ. 1350*l*.

5. If one earns 10 Shillings a Week, what will it come to in 52 Weeks ? Answ. 26*l*.

6. What will 215 *Ct*. of Madder cost at the Rate of 50*s*. per *Ct*. ? Answ. 537*l*. 10*s*.

7. At 6*s*. the Barrel of Barley, what will 139 Barrels come to ? Answ. 41*l*. 14*s*.

8. What will 1050*l*. of Merchandize come to at 19*d*. the *lb*. Answ. 83*l*. 2*s*. 6*d*.

9. If one Pound of Raisins cost 9 Farthings, what will 112*lb*. cost ? Answ. 1*l*. 1*s*.

10. If one spends 6 Pence a Day, what doth it amount to in one Year of 365 Days. Answ. 9*l*. 2*s*. 6*d*.

11. How much will 112*lb*. of Indigo come to at the Rate of 5*s*. the *lb*. Answ. 28*l*.

12. At

12. At 7s. the Gallon of Brandy, what will a Hhd. come to? *Answ.* 22l. 1s.

— II. —

13. If one lb. of Indigo cost 5s. 6d. what will one Hundred Weight cost? *Answ.* 30l. 16s.

Example.

lb.		s.	d.		lb.
1		5	6	:	112
		12			66
					66
		66			672
					672
					7392
					7392

272	}	61 6
7392		
2222		
22		30l. 16s.

14. How much will 7 Tuns of Butter come to at 18l. 10s. per Tun? *Answ.* 129l. 10s.

15. At 18s. 6d. the Ct. what will 120 Ct. come to? *Answ.* 111l.

16. If one Barrel of Barley cost 6s. 7d. what will 100 Barrels come to? *Answ.* 32l. 18s. 4d.

17. What will 112lb. of Sugar come to at 7½d. per lb. *Answ.* 3l. 10s.

18. If one Hundred of Merchandizes cost 18s. 8d. how much will 314 Ct. come to? *Answ.* 293l. 1s. 4d.

19. At

19. At $3\frac{1}{4}d.$ the *lb.* what will 112 *lb.* come to?
Answ. 1*l.* 10*s.* 4*d.*

— III. —

20. If one Ounce of Spice cost 2 Shillings, what will 112 *lb.* cost? *Answ.* 179*l.* 4*s.*

Example.

oz.	s.	lb.
1	2	112
		16
		17920z.
		2
		358 4
		£. 179 : 4

21. At 12 Shillings the Yard, how much will 10 Pieces of Cloth come to, every Piece 42 Yards?
Answ. 252*l.*

22. What will 31 Tuns of Wine come to, at 9*l.* per Hhd. ? *Answ.* 1116*l.*

23. If a Gallon of Oil cost 8*s.* how much will 10 Pipes come to, each Pipe 120 Gallons ? *Answ.* 480*l.*

24. How much will 59 Barrels of Oats come to at 3 Pence the Peck ? *Answ.* 11*l.* 16*s.*

25. If one Gallon of Brandy cost 5*s.* how much will 8 Hhds. come to ? *Answ.* 126*l.*

26. At

The Rule of Three Direct.

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26. At 9 Pence the lb. what will 9 Casks of Merchandizes come to, each weighing 40 lb.?
Ans. 13*l.* 10*s.*

27. What will 3 Casks of Merchandizes come to, each weighing 2 Hundred Weight, and at 7*d.* the lb.? *Ans.* 19*l.* 12*s.*

— IV. —

28. If one Yard of Stuff cost 17 Pence, what will 3 Pieces and 10 Yards come to, each Piece 42 Yards? *Ans.* 9*l.* 12*s.* 8*d.*

Example.

<i>Yd.</i>	<i>d.</i>	<i>Ps.</i>	<i>Yds.</i>
1	17	3	10
		42	
		136	
		17	
		952	
		136	
		2312	

238(8	{	1912
2322		
2222		
22		9 <i>l.</i> 12 <i>s.</i> 8 <i>d.</i>

29. What would 224 lb. 6 oz. of Spice come to, at the Rate of 3*s.* the oz.? *Ans.* 538*l.* 10*s.*

F

30. If

30. If one Peck of Oats cost 4*d.* what will 20 Barrels and 6 Pecks cost? *Ans.* 5*l.* 8*s.* 8*d.*

31. How much will 12 *lb.* 10 *oz.* of Silver come to, at 5*s.* per *oz.*? *Ans.* 38*l.* 10*s.*

32. What will 156 *Ct.* 2 *qrs.* of Merchandizes come to, at the Rate of 7*d.* per *lb.*? *Ans.* 511*l.* 4*s.* 8*d.*

33. If one Gallon of Brandy cost 4*s.* what will 12 Hhds. and 36 Gallons come to? *Ans.* 158*l.* 8*s.*

34. What must I have for 15 Tuns and 6 *Ct.* of Butter, at the Rate of 23*s.* per *Ct.*? *Ans.* 351*l.* 18*s.*

— V. —

35. If one Ounce of Spice cost 3*s.* 4*d.* what will 18 *lb.* 10 *oz.* cost? *Ans.* 49*l.* 13*s.* 4*d.*

Example.

<i>oz.</i>	<i>s.</i>	<i>d.</i>	<i>lb.</i>	<i>oz.</i>
1	3	4	18	10
	12		16	
			108	
			19	
224(4	99	13	298	
22920			40	
2222				
22	49	13 <i>s.</i> 4 <i>d.</i>		
			11920	

36. If 1 *lb.* of Tea cost 11*s.* 9*d.* what will 4 *Ct.* 3 *qrs.* come to? *Ans.* 312 *l.* 11*s.*

The Rule of Three Direct.

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37. I demand the Amount of 50 Pieces and 10 Yards of Cloth, at the Rate of 4s. 9d. per Yard, each Piece containing 20 Yards? *Answ.* 239l. 17s. 6d.

38. What will 76 Ct. 0 qrs. 8 lb. of Coffee come to, at 2s. 6d. the lb.? *Answ.* 1065l.

39. If one Pound of any Thing cost 1s. 9d. how much will 7 Ct. 2 qrs. 26 lb. come to? *Answ.* 75l. 15s. 6d.

40. At 10l. 10s. the Hhd. of Wine, what will 25 Tuns and 3 Hhds. cost? *Answ.* 1081l. 10s.

41. What will 150 tann'd Hides come to, weighing 39 Ct. 3 qrs. 1lb. at 6¼d. per lb.? *Answ.* 115l. 19s. 3¼d.

— VI. —

42. If one Tun of Wine cost 42l. what will 25 Tuns 2 Hhds. cost? *Answ.* 1071l.

Example.

<i>Tun</i>	<i>l.</i>	<i>Tuns</i>	<i>bbds.</i>
1	42	25	: 2
4		4	

102 Hhds.

42

204

408

4284 {
AAAA { 1071l.

F 2

43. At

43. At 14s. 4d. the Ct. of Cheese, what will 12 Ct. 2 qrs. come to? *Answ.* 8l. 19s. 2d.

44. How much will 17 Ct. 2 qrs. of Butter come to, at 19s. 10d. per Ct.? *Answ.* 17l. 7s. 1d.

45. If one Shilling gains 3d. what will 56s. 8d. gain? *Answ.* 14s. 2d.

46. What is the Amount of 760 Stone and 8lb. of Wool, at the Rate of 11s. 6d. per Stone? *Answ.* 437l. 5s. 9d.

47. What must I pay for 48 Tuns, 3 Hhds. of Wine, if 1 Tun cost 44l.? *Answ.* 2145l.

— VII. —

48. If in 5 Days I spend 1l. what will that amount to in a Year of 365 Days? *Answ.* 73l.

Example.

$$\begin{array}{r} \text{Ds.} \qquad \qquad \text{l.} \qquad \qquad \text{s.} \qquad \qquad \{ \text{73l.} \\ 5 \text{ ————— } 1 \text{ ————— } 365 \end{array}$$

49. If one Tun of Tallow cost 27l. how many Tuns can I have for 1350l.? *Answ.* 50 Tuns.

50. How many Oranges can I have for 10⁰ Crowns, at 2 Crowns per Hundred, each Hundred 6 Score? *Answ.* 6000.

51. If 5 Apples cost 1 Penny, what would 1000 Apples cost? *Answ.* 16s. 8d.

52. How many Herrings can I have for 1 Penny, if 1000 Herrings cost 16s. 8d.? *Answ.* 5 Herrings.

— VIII. —

— VIII. —

53. If one Hundred of Butter cost 25 Shillings, how many Hundred can I have for 162*l.* 10*s.*?
Answ. 130 *Ct.*

Example.

<i>s.</i>	<i>Ct.</i>	<i>l.</i>	<i>s.</i>
25	1	162	10
		20	
—			
		7	}
		3280	
		2888	
		22	
			130 <i>Ct.</i>

54. At 15*s.* per *Ct.* how many *Ct.* can I have then for 615*l.* 15*s.*? *Answ.* 821 *Ct.*

55. If one Peck of Barley cost 9*d.* how many Barrels can I buy then for 153*l.* 18*s.*? *Answ.* 256 Barrels and 8 Pecks.

56. How many *lb.* of Spice can I have for 216*l.* 18*s.* if 1 *oz.* cost 3*s.*? *Answ.* 90 *lb.* 6 *oz.*

57. What Quantity of Tallow can be bought for 121*l.* 10*s.* at the Rate of 18*s.* per *Ct.*? *Answ.* 135 *Ct.*

58. If 1 *lb.* of Pepper cost 17½*d.* how many *Ct.* can I have then for 77*l.* 8*s.* 9*d.*? *Answ.* 9 *Ct.* 1 *qr.* 26 *lb.*

— IX. —

59. If 1 Tun of Butter cost 24*l.* how many Tuns can I buy for 180*l.*? *Answ.* 7 Tuns 10 *Ct.*

Example.

$$\begin{array}{rcl}
 1. & \text{Tun} & 12 \text{ Tuns} \\
 24 \text{ --- } 1 \text{ --- } & 180 & \left. \begin{array}{l} 7 \text{ and } 12 \text{ over,} \\ 20 \end{array} \right\} \\
 & 24 & \\
 240 \left\{ & 10 \text{ Ct.} & \\
 244 \left\{ & & \\
 2 & & 240
 \end{array}$$

60. How much will 159 Yards of Ratteen come to, if for 6 Yards I pay 20s. ? *Ans.* 26l. 10s.

61. If one Tun of Wine cost 28l. what Quantity can I have then for 301l. ? *Ans.* 10 Tuns 3 Hhds.

62. What will 5 Pieces of Stuff come to, if for 16 Yards I pay 1l. each Piece containing 41 Yards ? *Ans.* 12l. 16s. 3d.

63. How much Butter can be bought for 121l. 12s. at the Rate of 28s. per Ct. ? *Ans.* 86 Ct. 3 qrs. 12 lb.

64. If one Tun of Brandy cost 40l. 12s. what Quantity can be bought for 720l. 13s. ? *Ans.* 17 Tuns 3 Hhds.

65. If one lb. of any Thing cost 3s. 4d. how many lb. can I have then for 160l. 15s. 10d. ? *Ans.* 964 lb. 12 oz. or 8Ct. 2qrs. 12lb. 12 oz.

— X. —

66. If 7lb. of Madder cost 42d. what will 1 lb. cost ? *Ans.* 6d.

Example.

$$\begin{array}{rcl}
 \text{lb.} & \text{d.} & \text{lb.} \\
 7 \text{ --- } 42 \text{ --- } & 1 \text{ comes } & 6d.
 \end{array}$$

67. If

67. If 25 Tuns of Butter cost 450*l.* what will one Tun be worth? *Ans.* 18*l.*

68. What will 1 Hhd. of Wine be worth if 105 Hhds. cost 1155*l.*? *Ans.* 11*l.*

69. If in 52 Weeks I earn 156*l.* how much is that in one Week? *Ans.* 3*l.*

70. Suppose 150 Men were provided with 9000*lb.* of Bread for two Months, I demand each Man's Share? *Ans.* 60 *lb.*

— XI. —

71. If 1 Ct. of Butter cost 18*s.* 8*d.* what is 1*lb.* worth? *Ans.* 2*d.*

Example.

$$\begin{array}{r}
 \text{lb.} \quad \quad \text{s.} \quad \text{d.} \quad \quad \text{lb.} \\
 112 \text{ ——— } 18 : 8 \text{ ——— } 1 \\
 \quad \quad \quad 12 \\
 \quad \quad \quad \hline
 \quad \quad \quad 224 \quad \left\{ \begin{array}{l} 2d. \\ 22d. \end{array} \right.
 \end{array}$$

72. If 101 salt Ox Hides weigh 75 Ct. 3 *qrs.* what do they weigh a Piece one with another? *Ans.* 84 *lb.*

73. What will 1 Hhd. of Wine cost, if 15 Hhds. cost 162*l.* 10*s.*? *Ans.* 10*l.* 16*s.* 8*d.*

74. At 23*s.* 4*d.* per Ct. what is it a *lb.*? *Ans.* 2½*d.*

75. What will 1 *lb.* cost at the Rate of 46*s.* 8*d.* per Ct.? *Ans.* 5*d.*

76. Suppose

76. Suppose 305 tann'd Hides weigh 76 Ct. 1 qr. what do they weigh a Piece one with another? *Answ.* 28 lb.

77. If one Ct. cost 32s. 8d. what is it a lb.? *Answ.* 3½d.

— XII. —

78. If 45 Ct. of Merchandizes cost 60l. 11s. 3d. what is one Ct. worth? *Answ.* 1l. 6s. 11d.

Example.

$$\begin{array}{r}
 \text{Ct.} \quad \quad \quad \text{l.} \quad \quad \text{s.} \quad \quad \text{d.} \quad \quad \text{Ct.} \\
 45 \text{ ———} 60 : 11 : 3 \text{ ———} 1 \\
 \quad \quad \quad 20 \\
 \hline
 \quad \quad \quad 1211 \\
 \quad \quad \quad 12 \\
 \hline
 \begin{array}{r}
 14833 \\
 4833 \\
 44
 \end{array}
 \left. \begin{array}{l}
 8(11 \\
 823 \\
 222 \\
 2
 \end{array} \right\}
 \left\{ \begin{array}{l}
 216 \\
 \hline
 1l. 6s. 11d.
 \end{array} \right.
 \end{array}$$

79. What will 1 Tun of Merchandizes stand me in, if for 13 Tuns I pay 241l. 1s. 11d.? *Answ.* 18l. 10s. 11d.

80. If 284lb. of any Thing cost 22l. 3s. 9d. what costs 1lb.? *Answ.* 1s. 6¾d.

81. What will 1 Ct. of Butter be worth if 500 Ct. cost 525l. 10s. 5d.? *Answ.* 1l. 1s. 0¾d.

82. If 369lb. of Indigo cost 99l. 11s. 0¾d. what is 1lb. worth? *Answ.* 5s. 4¾d.

83. What will one Yard of Canvas cost, if for 5690 Yards I pay 88l. 18s. 1½d.? *Answ.* 3¾d.

84. If

The Rule of Three Direct. 69

84. If 301 Barrels of Beef cost 302*l.* 5*s.* 1*d.* what costs 1 Barrel? *Ans.* 1*l.* 0*s.* 1*d.*

— XIII. —

85. If 10 Pieces of Cloth (every Piece 42 Yards) cost 126*l.* what will 1 Yard cost? *Ans.* 6*s.*

Example.

<i>Ps.</i>	<i>l.</i>	<i>Yd.</i>
10	126	1
42	20	
420	2520	

Ans. 6*s.*

86. If 575 Hundred of Herrings, of 6 Score to the Hundred, cost 25 Guineas of 23*s.* each, how many is that for 1*s.*? *Ans.* 120.

87. If 10 Tuns of Brandy cost 680*l.* what will one Hhd. stand in? *Ans.* 17*l.*

88. What is 1 Ct. of Butter worth if 5 Tuns cost 130*l.*? *Ans.* 26*s.*

89. If 5 Hhds. of Brandy cost 84*l.* what is that a Gallon? *Ans.* 5*s.* 4*d.*

90. If 2 Pipes of Oil, *qt.* 240 Gallons, cost 36*l.* what is 1 Quart worth? *Ans.* 9*d.*

— XIV. —

91. If 6 *lb.* 6*oz.* of Avoir-du-pois wt. cost 4*l.* 5*s.* what will 1 *oz.* cost? *Ans.* 10*d.*

Example.

*The Rule of Three Direct.**Example.*

<i>lb.</i>	<i>oz.</i>		<i>l.</i>	<i>s.</i>		<i>oz.</i>
6	:	6	4	:	5	1
16			20			
202			85			
			12			
			2020			

Ans. 10d.

92. What will 1 Hhd. cost, if for 12 Tuns 3 Hhds. I pay 459*l.*? *Ans.* 9*l.*

93. If 27 Ct. 2 qrs. of Merchandizes cost 341*l.* what is 1 qr. worth? *Ans.* 3*l.* 2*s.*

94. If 3 Pieces and 10 Yards of Cloth (each Piece 42 Yards) cost 115*l.* 12*s.* what costs 1 Yard? *Ans.* 17*s.*

95. What is 1*lb.* of Butter worth, if for 429 Ct. 0 qrs. 24*lb.* I pay 650*l.* 19*s.* 6*d.*? *Ans.* 3½*d.*

96. If 17 Tuns 2 Hhds. of Wine cost 896*l.* 17*s.* 6*d.* what is that a Hhd.? *Ans.* 12*l.* 16*s.* 3*d.*

—XV.—

97. A Merchant buys 2 Hhds. of Madder wt. 17 Ct. 2 qrs. for 52*l.* 10*s.* I demand what 1 Ct. costs? *Ans.* 3*l.*

Example.

Example.

Ct.	qrs.		l.	s.		Ct.
17	:	2	52	:	10	1
4			20			4
70			1050			
			4			
			4200	}	610	
			770			
			Answ. 3l.			

98. If 7 Tuns 2 Hhds. of Brandy cost 360*l*. what is 1 Tun worth? *Answ.* 48*l*.

99. What will 1 *lb.* of Spice cost, if 7 *lb.* 8 *oz.* cost 4*l.* 5*s.*? *Answ.* 11*s.* 4*d.*

100. If 112*l.* 15*s.* gain 22*l.* 11*s.* what will 1*l.* gain? *Answ.* 4*s.*

101. What will 1 *Ct.* of Butter come to if for 33 *Ct.* 1 *qr.* 22 *lb.* I pay 46*l.* 16*s.* 6*d.*? *Answ.* 28*s.*

102. If 67 Hhds. and 9 Gallons of Brandy cost me 634*l.* 10*s.* what doth 1 Hhd. cost? *Answ.* 9*l.* 9*s.*

103. If 203 Tuns 9 *Ct.* 3 *qrs.* 3*lb.* of Tallow stand me in 4558*l.* 3*s.* what doth one Tun cost? *Answ.* 22*l.* 8*s.*

— XVI. —

104. If 14*lb.* of Sugar are sold for 13*s.* at what Rate is that the *Ct.*? *Answ.* 5*l.* 4*s.*

Example.

Example.

l. s. lb.

14—13—112

13

336

112

$$\begin{array}{l} 2486 \\ 2444 \\ 22 \end{array} \left\{ \begin{array}{l} 10(4 \\ \hline 5l. 4s. \end{array} \right.$$

Or thus,

lb. s. lb.

24—13—222

8

13

1014

5l. 4s.

105. If 5 Yards of Cloth cost 35s. what will 3 Yards cost? *Answ.* 21s.

106. What Quantity of Raisins can I have for 63d. if 7 lb. cost 21d.? *Answ.* 21lb.

107. If 7 lb. of Sugar cost 5s. how many Ct. can I have then for 127l. ? *Answ.* 31 Ct. 3 qrs.

108. What Quantity of Figs can I have for 21d. if 21lb. cost 63 d. ? *Answ.* 7lb.

—XVII.—

109. If in 365 Days I spend 18l. 5s. how much is that a Week? *Answ.* 7s.

Example.

ds. l. s. ds.

365—18 : 5 — 7

20

365

7

$$\begin{array}{l} 2888 \\ 363 \end{array} \left\{ \begin{array}{l} 7 \text{ Ans.} \end{array} \right.$$

Or thus,

ds. l. s. ds.

368—18 : 5 — 7

20

368

Answ. 7s.

The Rule of Three Direct.

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110. If 840lb. cost 10l. 10s. what will 35lb. cost? *Answ.* 8s. 9d.

111. What will 112lb. stand in if 7lb. are worth 1s. 2d.? *Answ.* 18s. 8d

112. If 112lb. of Currants cost 1l. 12s. 8d. what will 7lb. come to? *Answ.* 2s. 0½d.

113. What will 25lb. of any Thing come to, at the Rate of 9l. 6s. 8d. the 100lb.? *Answ.* 2l. 6s. 8d.

114. How much will 84lb. of Merchandizes cost, if 1 Ct. cost 1l. 7s.? *Answ.* 1l. 0s. 3d.

115. How much Beef can I buy for 100l. if 802 Ct. 1 qr. 17lb. cost 650l.? *Answ.* 123 Ct. 1 qr. 22 lb.

— XVIII. —

116. If 9 Tuns of Wine cost 72l. how many Tuns can I have for 100l.? *Answ.* 12 Tuns, 2 Hhds.

Example.

l. Tuns l.
72 ——— 9 ——— 100

 9
 ——— Tuns
900 } 12 and 36 over.
722 }
7 }

 4
 ——— Hhds.
344 } 2
72 }

G

Or

The Rule of Three Direct.

Or thus,

l.	Tuns.	l.	{	Tuns
72	9	200		12 and 4 over.
8		88		4
				26
				8
				} 2 Hbds.

Or thus,

l.	Tuns.	l.	{	} 12 Tuns 2 Hbds.	
72	9	200			22
2		22			AA
	4				
	36				

117. What will 6500lb. come to, if 5600lb. cost 735l. ? *Answ.* 853l. 2s. 6d.

118. How many Tuns of Brandy can I buy for 2133l. if 12 Tuns cost 1296l. ? *Answ.* 19 Tuns, 3 Hhds.

119. If 60 Ct. of Hops cost 320l. what Quantity can I have for 4601 l. ? *Answ.* 862Ct. 2qrs. 21lb.

— XIX. —

120. If 3 Hhds. of Brandy cost 68l. 17s. what will 7 Gallons be worth ? *Answ.* 2l. 11s.

Example.

Hbds. l. s. Gal.

3 — 68 : 17 — 7

63 20

189 1377

7

28

9039

2899

28

2l. 11s

Or thus,

Hbds. l. s. Gal.

3 — 68 : 17 — 7

63 20

— 2877

27 277

2 2l. 11s

121. A Merchant bought 14 Casks of Indigo, Wt. 8 Ct. for 313*l.* 12*s.* I demand what 7*lb.* are worth? *Answ.* 2*l.* 9*s.*

122. If 10 Ct. of Merchandizes cost 384 Crowns of 5*s.* 5*d.* each, what will 14*lb.* come to? *Answ.* 26*s.*

123. What will 4 Yards of Cloth cost, if 19 Picces (each Pice 35 Yards) cost 280 Cobs, each Cob at 4*s.* 9*d.*? *Answ.* 8*s.*

124. If 2 Pipes of Oil cost 82*l.* 10*s.* each Pipe 120 Gallons, what will 1 Jar, containing 20 Gallons, cost? *Answ.* 6*l.* 17*s.* 6*d.*

125. What will a Quarter of an Hundred of Coffee come to, if 3 Bales containing 10 Ct. cost 143*l.* 16*s.* 8*d.*? *Answ.* 3*l.* 11*s.* 11*d.*

— XX. —

126. If for 1*s.* 6*d.* I can buy 7*lb.* of Raisins, what Quantity can I buy for 605*l.* 11*s.*? *Answ.* 504 Ct. 2 qrs. 14*lb.*

Example.

<i>s.</i>	<i>d.</i>	<i>lb.</i>	<i>l</i>	<i>s.</i>
1	6	7	605	11
			20	
18			12111	
			12	

2	(1	2(2	Ct. qr. lb.	14532
213934	28(4	2328	504 : 2 : 14	7
2027324	86818	444		
288888	28888			
2222	222	1017324		

G 2

127. If

127. If 9s. 6d. gain 5d. what will 198 Guineas 10s. 9d. gain, each Guinea at 23s. ? *Ans.* 10l. 0s. 2½d.

128. How many Tuns Wt. of Merchandizes can I have for 900l. 8s. 5½d. if 7 Tuns cost 285l. ? *Ans.* 22 Tuns, 2 Ct. 1 qr. 7 lb.

129. If for 32s. 8d. I buy 28lb. of Galls, what Quantity can I have then for 88l. 13s. 4d. ? *Ans.* 13 Ct. 2 qrs. 8lb.

130. What will 343l. 14s. 8d. gain, if 2l. 13s. 8½d. gain 16s. *Ans.* 102l. 8s.

131. If 1 Ct. 2 qrs. of Butter cost 28s. what will 256 Ct. 3 qrs. 14 lb. come to ? *Ans.* 239l. 15s.

— XXI. —

132. If for 607l. 10s. I buy 69 Ct. 0 qrs. 21lb. of Merchandizes, what Quantity can I have then for 176 Guineas, and 2s. each Guinea at 23s. ? *Ans.* 23 Ct. 0 qrs. 7lb.

Example.

l.	s.	Ct.	qr.	lb.	gs.	s.
607	: 10	69	: 0	: 21	176	: 2
20		112			23	
121	50	77	49	40	50	
		40	50			

$$\begin{array}{l}
 32883480 \left\{ \begin{array}{l} (7 \{ 2 \{ \text{Ct.} \\ 2888 \{ 92 \{ \text{qrs.} \\ 2228 \{ 28 \{ \text{lb.} \end{array} \right. \quad 23 : 0 : 7
 \end{array}$$

133. If for 176 Guineas and 2s. each Guinea at 23s. I can buy 23Ct. 0 qrs. 7lb. of Merchandizes, what Quantity can I have then for 607l. 10s. ? *Ans.* 69Ct. 0 qrs. 21lb.

134. What will 112 Ct. 3 qrs. 23 lb. of Butter come to, if 95 Ct. 0 qrs. 20 lb. cost 88*l*. 16*s*. 8*d*. ?
*Ans*w. 105*l*. 8*s*. 6*d*.

135. If 1 qr. 14 lb. of Merchandizes cost 2*l*. 15*s*. 9*d*. what will 50 Ct. 3 qrs. 24 lb. come to ?
*Ans*w. 378*l*. 16*s*. 8½*d*.

136. If 100 lb. of any Thing cost 25*l*. 6*s*. 3*d*. what will 625 lb. cost ? *Ans*w. 158*l*. 4*s*. 0½*d*.

137. What will 95 Ct. 0 qrs. 20 lb. cost if 112 Ct. 3 qrs. 23 lb. cost 105*l*. 8*s*. 6*d*. ? *Ans*w. 88*l*. 16*s*. 8*d*.

— XXII. —

138. If 1 lb. of Spice cost 10*s*. 8*d*. what is half an Ounce worth ? *Ans*w. 4*d*.

Example.

lb.	s.	d.	oz.
1	10	8	½
32	12		
228		}	
32			
		4 d.	

139. What will 1 lb. of Spice cost, if half an Ounce cost 4*d*. ? *Ans*w. 10*s*. 8*d*.

140. If for 10*s*. 8*d*. I have 1 lb. of Spice, what Quantity can I have for 4*d*. ? *Ans*w. ½ oz.

141. If for 26½*d*. I have 10½ oz. what Quantity can I have for 8*s*. 4*d*. ? *Ans*w. 2 lb. 8 oz.

142. If for 8*s*. 4*d*. I have 2 lb. 8 oz. what Quantity can I have for 26½*d*. *Ans*w. 10½ oz.

143. What will $10\frac{1}{2}$ oz. cost, if 2lb. 8oz. cost 8s. 4d. ? *Ans.* $26\frac{1}{2}$ d.

144. At 18s. 8d. the Ct. what will $\frac{3}{4}$ of a lb. come to ? *Ans.* $1\frac{1}{4}$ d.

145. If 1 Ct. cost 9s. 4d. what will $\frac{1}{2}$ lb. cost ? *Ans.* $\frac{1}{2}$ d.

146. If 1lb. of Spice cost 3l. 12s. what will $6\frac{1}{2}$ Ounces come to ? *Ans.* 1l. 10s. $4\frac{1}{2}$ d.

147. If 1 Ct. of Merchandizes cost 21s. what will 1lb. stand in ? *Ans.* $2\frac{1}{4}$ d.

148. At 2s. 4d. the Ct. what is it a lb. ? *Ans.* $\frac{1}{4}$ d.

— XXIII. —

149. Bought 3 Hhds. of Brandy, containing 61, 62, and $62\frac{1}{2}$ Gallons, at 6s. 8d. per Gallon. I demand how much it comes to ? *Ans.* 61l. 16s. 8d.

Example.

<i>Gal.</i>	<i>s.</i>	<i>d.</i>		
1	6	: 8	—	61
2	12			62
				$62\frac{1}{2}$
				—
				185 $\frac{1}{2}$
				—
				371
				80
				—
				29680

$\begin{array}{r} 29680 \\ 22222 \\ \hline \end{array}$
 $\left\{ \begin{array}{l} 248(8 \\ 14840 \\ 12222 \end{array} \right\} \begin{array}{r} 12316 \\ \hline 61:16:8d. \end{array}$

150. How

150. How much will 4 Pieces of Drugget come to, No. 1, containing $40\frac{1}{4}$ Yards, No. 2, $49\frac{1}{2}$ Yards, No. 3, 47 Yards, No. 4, $45\frac{1}{4}$ Yards, at 3s. 4d. the Yard? *Ans.* 30l. 6s. 8d.

151. Bought 4 Parcels of Butter the first weighed 10 Ct. 3 qrs. 27 lb. The second 13 Ct. 0 qrs. 1 lb. The third 23 Ct. 2 qrs. 0 lb. The fourth 19 Ct. 3 qrs. 14 lb. at 16s. 8d. the Ct. What do they amount to? *Ans.* 56l. 2s. 11d.

152. Sold 4 Hhds. of Tobacco, No. 1, weighed 5 Ct. 2 qrs. No. 2, 5 Ct. 1 qr. 14 lb. No. 3, 5 Ct. 0 qrs. 7 lb. No. 4, 5 Ct. 1 qr. 21 lb. at $10\frac{1}{2}$ d. per lb. I demand what they amount to? *Ans.* 104l. 14s. 9d.

153. With how many Guineas of 23s. each, could I pay for 4 Hhds. of Brandy containing $62\frac{1}{2}$, 63, $62\frac{1}{4}$, and $62\frac{3}{4}$ Gallons, at the Rate of 5s. per Gallon? *Ans.* 54 Guineas, 11s. and 9d.

154. Bought 3 Hhds. of Sugar, No. 1, weighed 7 Ct. 2 qrs. 11 lb. No. 2, 8 Ct. 1 qr. 10 lb. No. 3, 9 Ct. 1 qr. 8 lb. at 37s. 4d. per Ct. I demand how much they come to, and what a Pound? *Ans.* the whole is 47 lb. 3s. and 1 lb. stands in 4d.

— XXIV. —

155. Suppose a Bale of Merchandizes weighed 300 lb. and cost 15l. 4s. 9d. pays for Duty 2d. per lb. for Freight 25s. for Porterage Home 1s. 6d. how much will 1 lb. of the said Merchandizes stand me in? *Ans.* $15\frac{1}{4}$ d.

Example.

Example.

First Cost, ——— 1. 15 : 04 : 9

Duty, ——— 02 : 10 : 0

Freight, ——— 01 : 05 : 0

Porterage, ——— 00 : 01 : 6

lb.

lb.

If 300 ——— 19 : 01 : 3 ——— 1 *Answ.* 15½ l.

156. Received 4 Pipes of Oil, containing 480 Gallons, cost me 5s. 5½d. per Gallon; paid for Freight 4s. per Pipe, for Duty 6d. per Gallon, Porterage 1s. per Pipe. I demand the whole Cost, and what it stands me in the Gallon? *Answ.* 144l. and is 6s. per Gallon.

157. Bought 100 raw Ox Hides, weight 98 Ct. 2qrs. at 23s. per Ct. paid for Salt 2l. 17s. 8d. for salting them, &c. 8s. 6½d. for Cellarage 1l. I demand the whole Cost, and what 1 Ct. stands in? *Answ.* 117l. 11s. 8½d. and is 1l. 3s. 10½d. per Ct.

158. Bought 200 Carcasses of Beef, weight nett 850 Ct. 2qrs. at 6s. 6d. per Ct. and salted them up in 400 Barrels, which cost 2s. 9d. per Piece, paid for 50 Barrels of Salt at 20s. per Barrel, paid for Salting and Labourers, &c. 4l. 0s. 1d. Now I want to know what one Barrel stands me in? *Answ.* 19s. 3¼d.

159. Shipt off 350 Casks of Butter, weight 546 Ct. 2qrs. 14lb. cost 22s. 6d. per Ct. paid for Duty 6d. per Ct. Cooperage 2l. 16s. 0½. Boat Hire 18s. Porterage, &c. 2l. 3s. 7d. Cellarage 3l. 4s. 7d. I demand what one hundred of said Butter stands me in on Board? *Answ.* 23s. 4d.

— XXV. —

160. Bought 3 Sorts of Brandy and an equal Quantity of each Sort, one Sort at 5s. per Gallon, the second at 6s. and the third at 7s. per Gallon, what is one Gallon worth one with another?
Ans. 6s.

Example.
 Gall.
 1 ————— 5
 1 ————— 6
 1 ————— 7
 —————
 If 3 ————— 28 ————— 1 Gal.
Ans. 6 Shillings.

161. Bought 3 Sorts of Vinegar, and an equal Quantity of each Sort, viz. of $3\frac{1}{2}d.$ $4d.$ and $4\frac{1}{2}d.$ the Quart, and mixed them together, what doth one Quart stand me in? *Ans.* $4d.$

162. Bought 4 Sorts of Salt, and of each Sort 100 Barrels, viz. of 14s. 16s. 17s. and 19s. per Barrel, and mixed them together, what doth one Barrel cost me? *Ans.* 16s. 6d.

163. Paid for 4 Tuns of Tallow 120l. more for 5 Tuns 150l. 5s. more for 6 Tuns 192l. 10s. what doth one Tun stand me in one with another? *Ans.* 30l. 17s.

164. Bought 102 Barrels of Wheat which cost 62l. 4s. more 140 Barrels cost 70l. more 260 Barrels cost 143l. 18s. being all mixed. I demand the Price of 1 Barrel? *Ans.* 11s.

165. A

165. A Merchant bought 3 Sorts of Tobacco, viz. 100lb. at 6d. per lb. 120lb. at 10d. per lb. and 200lb. at 12d. per lb. which being mixed together, tell me how much 1lb. stands him in? *Ans.* 10d.

— XXVI. —

166. A Cashier has in divers Species 109l. 12s. for which he would have Crowns of 5s. 5d. and Ducatoons of 6s. but of each Sort an equal Number. How many of each must he receive? *Ans.* 192 of each.

Example.

$$\begin{array}{r}
 65 \\
 72 \\
 \hline
 \text{of each}
 \end{array}
 \quad
 \begin{array}{r}
 l. \quad s. \\
 109 : 12 \\
 20 \\
 \hline
 2192 \\
 12 \\
 \hline
 \begin{array}{r}
 2 \\
 1267 \\
 26804 \\
 13777 \\
 133 \\
 2
 \end{array}
 \left. \vphantom{\begin{array}{r} 2 \\ 1267 \\ 26804 \\ 13777 \\ 133 \\ 2 \end{array}} \right\} 192
 \end{array}$$

167. How many Reams of Paper of 9s. 9d. and 12s. 3d. the Ream, can I have of each Sort for 55l.? *Ans.* 50 Reams of each.

168. How many Guineas of 23s. and Pistoles of 18s. 6d. of each an equal Number, could I have for 996 Crowns of 5s. 5d.? *Ans.* 130 of each.

169. How

169. How do you prove the above Answer to be right?

170. A Vintner paid 171*l.* for 3 Sorts of Wine, viz. at 8*l.* 10*s.* at 9*l.* 5*s.* and at 10*l.* 15*s.* the Hhd. and had of each Sort an equal Quantity, I demand how many of each Sort he had? *Answ.* 6 Hbds.

171. Bought 3 Sorts of Salt, and of each Sort an equal Quantity, the Price at 14*s.* 16*s.* and 19*s.* the Barrel, and the whole amounted to 490*l.* how many Barrels had I of each Sort? *Answ.* 200 Bar.

—XXVII.—

172. A Merchant having bought certain Merchandizes for 1450*l.* with Condition to deduct 1 per Ct. for prompt Payment, I demand how much he is to pay? *Answ.* 1435*l.* 10*s.*

Example.

<i>l.</i>	<i>l.</i>	<i>l.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
100	—	1	—	14	150
					20
				10	100
				1450	: 00 : 00
				14	: 10 : 00
				1435	: 10 : 00

173. How much must I pay of 1655*l.* deducting 1 per Ct. for prompt Payment? *Answ.* 1638*l.* 9*s.*

174. How much must one pay of 912*l.* 10*s.* deducting 1 per Ct.? *Answ.* 903*l.* 7*s.* 6*d.*

175. How much are 1364*l.* 17*s.* 6*d.* deducting 1 per Ct.? *Answ.* 1351*l.* 4*s.* 6*d.* near enough for Merchant's Business, though in Truth it is 1351*l.* 4*s.* 6*¾d.*

176. How much is 6050*l.* deducting $\frac{1}{2}$ per Ct.? *Answ.* 6019*l.* 15*s.*

177. How

177. How much must be paid instead of 815*l.* 12*s.* deducting for some Reasons $1\frac{1}{2}$ per Ct. ? *Ans.* 803*l.* 7*s.* 3*d.* and something more.

178. What is 1537*l.* 17*s.* 8*d.* deducting $\frac{1}{2}$ per Ct. ? *Ans.* 1530*l.* 3*s.* 10 $\frac{2}{3}$ *d.*

179. And how much must I pay of 1096*l.* 19*s.* 6*d.* deducting $\frac{1}{4}$ per Ct. ? *Ans.* 1094*l.* 4*s.* 7 $\frac{1}{2}$ *d.*

—XXVIII.—

180. A Captain of a Ship being provided with 24000*lb.* of Bread for 200 Seamen, of which each Man eats 4*lb.* per Week, how long will the said Bread last ? *Ans.* 30 Weeks.

Example.

200			
4			
Week			<i>lb.</i>
1. 3000	1	24000	
<i>Ans.</i> 30 Weeks.			

181. How long would 3150*lb.* of Beef last for 25 Men, if they get $\frac{1}{2}$ *lb.* each, and that 3 Times a Week ? *Ans.* 56 Weeks.

182. A Fortress being provided with 184000*lb.* of Provisions and 700 Men, who consume each 5*lb.* a Week, how long can they subsist ? *Ans.* 52 Weeks and 4 Days.

183. Suppose 150 Seamen are provided with 984 Gallons and 3 Pints of Brandy for 7 Months (each Month 30 Days) what is one Man's Share per Day ? *Ans.* $\frac{1}{3}$ of a Pint, or a Noggin.

—XXIX.—

184. How many Tiles of .8 Inches Square, would lay a Floor of 16 Feet broad and 20 Feet long? *Ans.* 720.

$$\begin{array}{r}
 \begin{array}{ccc}
 8 & & 16 \\
 8 & \text{Tile} & 20 \\
 \hline
 64 & \text{---} & 320 \\
 & & 144 \\
 & & \hline
 & & 1280 \\
 & & 1280 \\
 & & 320 \\
 & & \hline
 & & 12
 \end{array}
 \end{array}$$

$\left. \begin{array}{l} 12 \\ 1280 \\ 1280 \\ 320 \end{array} \right\} 720$

185. How many Yards of Cloth of 2 Feet broad will hang a Wall of 24 Feet broad and 20 Feet high? *Ans.* 80.

186. A Piece of Land of 80 Perches long and 70 Perches broad, is to be laid out in Meadows of 20 Perches long and 14 Perches broad, I demand how many such Meadows it would make? *Ans.* 20.

187. How many Tiles of $\frac{3}{4}$ Foot Square, would lay a floor of 50 Feet long and 20 Feet broad? *Ans.* 1777 $\frac{1}{2}$.

188. How many Stones of 10 Inches long 9 Inches broad and 4 Inches thick, would be wanting to build a Wall of 80 Feet long, 20 Feet high and 2 $\frac{1}{2}$ Feet thick? *Ans.* 17280.

189. Suppose 100 Ct. 2 qrs. 14 lb. of Beef for Ships Use was to be cut up in Pieces of 4 lb. 3 lb. 2 lb. 1 lb. and $\frac{1}{2}$ lb. and of each an equal Number, how many Pieces of each would it make? *Ans.* 1073 and $3\frac{1}{2}$ lb. over.

— XXX. —

Questions to exercise the Rule of Three, promiscuously set down.

190. If 1 lb. of Pepper cost 13 d. and 1 lb. of Sugar 14 d. how much of each can I have then for 4 l. 1 s. *Ans.* 36 lb.

191. A. sets out of a certain Town, and goes 9 Miles a Day; 7 days after B. sets out and goes 12 Miles a Day, I demand in how many Days he will overtake A? *Ans.* in 21 Days.

192. If a Tun of Tallow cost 35 l. and is sold at the Rate of 10 per Ct. Profit, I demand for how much it was sold? *Ans.* 38 l. 10 s.

193. At what Rate must I sell the aforesaid Tallow, if I have a Mind to gain by 10 Tuns as much as one Tun cost? *Ans.* as above.

194. Suppose a Grey-Hound makes 27 Springs whilst a Hare makes 25, and the Springs are alike. Now if the Hare is 50 Springs before the Hound, I would know in how many Springs the Hound will overtake her? *Ans.* 675.

195. If a Tun of Butter cost 37 l. 10 s. I demand at what Rate must I sell it, to gain by 15 Tuns as much as one Tun cost? *Ans.* 40 l.

196. Bought 45 Barrels of Beef, at 21 s. per Barrel, among which are 16 Barrels, whereof 4 are worth

worth but 3 of the rest: I demand how much I must pay? *Ans.* 43*l.* 1*s.*

197. In a besieged Fortrefs are 5000 Men provided with so much Bread, that each Man may have 12 Ounces per Day. Now if 1000 are sent among them, I would know how many Ounces each Man then may have per Day? *Ans.* 10 Ounces.

198. If 5 and 3 make 10, how much make 6 and 8? *Ans.* 17½.

199. Two Travellers set out at the same Time, and from the same Place, the one goes East 24 Miles a Day, and the other goes West 30 Miles a Day, in how many Days, (counting each Day 24 Hours) will they be 2150 Miles asunder? *Ans.* 39 *Ds.* 19 *Hs.* 33½ *Min.*

200. How many Guineas of 23*s.* and Pistoles of 18*s.* 6*d.* of each an equal Quantity, can I have for 186*l.* 15*s.*? *Ans.* 90.

201. If 1 *lb.* of Sugar which cost 10*d.* is sold for 13½*d.* I demand the Gain per *Ct.*? *Ans.* 35 per *Ct.*

202. How many Guineas of 23*s.* each would pay for 10 Pieces of Tapestry, each Piece 25½ Yards long, and 4 Yards broad, at 15*s.* 8*d.* the square Yard? *Ans.* 694 Guineas and 18*s.*

203. If 112*lb.* of Tea cost 84*l.* 13*s.* 4*d.* at what Rate must it be sold a *lb.* to lose by the whole Parcel 10*l.*? *Ans.* 13*s.* 4*d.*

204. If I sell Goods for 13½*d.* the *lb.* I find to have gained 35 per Cent. I demand what the Goods were bought for? *Ans.* 10*d.* a *lb.*

205. A Gentleman has 510*l.* 8*s.* 4*d.* per Annum, I demand how much he may spend per Day,

if he has a mind to lay up yearly 100 Guineas at 23*s.* each? *Ans.* 21*s.* 8*d.*

206. For 20*s.* I bought 3 Sorts of Wine, the first for 8*d.* the second for 12*d.* and the third for 16*d.* the Quart, and I had of each Sort an equal Quantity, I demand how much it was? *Ans.* 6 $\frac{2}{3}$ Quarts.

207. A. travels 12 Miles a Day, and when he has been gone 15 Days, B. sets out after him; I demand how many Miles in a Day he must go to overtake A. in 60 Days? *Ans.* 15 Miles.

208. If in 4 Months I spend as much as I gain in 3 Months, how much can I lay up at the Year's end, if I gain every 6 Months 150*l*? *Ans.* 75*l.*

209. If 840 Eggs are bought at the Rate of 10 a Penny, and 240 more at the Rate of 8 a Penny, and sold all at 18 for 2*d.* I demand whether Profit or Loss? *Ans.* 6*d.* Profit.

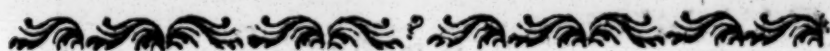
210. If a Piece of Cloth 30 Yards long, cost 15*l.* how much will a Dutch Ell come to, if 3 Yards are equal to 4 Ells? *Ans.* 7 $\frac{1}{2}$ *s.*

211. If 2*lb.* of Pepper cost 25*d.* what will 60*lb.* of Cloves come to, if 3*lb.* of Cloves are worth 16*lb.* of Pepper? *Ans.* 16*l.* 13*s.* 4*d.*

212. How many Dozen of Gloves at 8*d.* the Pair, will pay for 36 Dozen and 8 Pair of Stockings, at 3*s.* 6*d.* the Pair? *Ans.* 192 $\frac{1}{2}$ Dozen.

213. How much would a Piece of Plank come to of 5 $\frac{1}{4}$ Feet long, 2 $\frac{1}{2}$ Feet broad at one End, and 1 $\frac{1}{2}$ Foot broad at the other End, at 18*d.* the square Foot? *Ans.* 15*s.* 9*d.*

214. I bought a Parcel of Cloth at the Rate of 6s. for every two Yards, of which I sold a certain Quantity at the Rate of 18s. for every 5 Yards, and then I found to have gained as much as 18 Yards did cost. Now I demand how many Yards I sold?
Ans. 90 Yards.



C H A P. IX.

Notation and Numeration of FRACTIONS.

S E C T. I.

A FRACTION or broken Number, is a Part or Parts of an Integer, it consists of two Parts or Numbers set one over the other, with a Line drawn between them, as $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{13}{17}$, &c.

That below the Line is called the Denominator, because it denominates or shews the Parts any whole Number is divided into, and the Number above the Line is called the Numerator, because it numbers or tells how many of those Parts the Fraction does consist of.

When the Numerator is less than the Denominator, the Fraction is less than Unity, and this is called a proper Fraction, as $\frac{4}{5}$, $\frac{7}{8}$, $\frac{11}{12}$, $\frac{32}{33}$, &c.

When the Numerator is either equal to, or greater than the Denominator, it is called an improper Fraction, as $\frac{4}{4}$ is equal to 1, or $\frac{4}{3}$ is equal to $1\frac{1}{3}$.

Compound Fractions, or Fractions of Fractions, are such as consist of more than one Numerator and one Denominator, as $\frac{1}{2}$, of $\frac{3}{4}$ of $\frac{4}{5}$, and are always connected by the Word *of*.

A mixed Number is always written thus, $2\frac{1}{2}$, or $5\frac{3}{8}$, $7\frac{2}{3}$, &c.



C H A P. X.

Of Abbreviation of FRACTIONS.

TO abbreviate or reduce a Fraction to its least Term, you must find the greatest common Divisor that will divide both the Numerator and Denominator without any Remainder, and the Quotient is a new Fraction of the same Value, and in its lowest Name or Term.

Rule Divide the Denominator by the Numerator, and then divide the last Divisor by the Remainder, and so continue till nothing remains, then the last Divisor will be the greatest common Divisor sought, as suppose if $1\frac{2}{17}$ was to be reduced, you'll find it to be equal to $\frac{7}{9}$ thus,

$$\begin{array}{rcl}
 \begin{array}{l} 26 \\ 17 \end{array} \left\{ \begin{array}{l} 13 \\ 9 \end{array} \right\} 1 & \begin{array}{l} 13 \\ 9 \end{array} \left\{ \begin{array}{l} 26 \\ 9 \end{array} \right\} 3 & \begin{array}{l} 26 \\ 17 \end{array} \left\{ \begin{array}{l} 2 \\ 9 \end{array} \right\} 2 \\
 & & \text{com. } 17 \text{ divisor} \\
 & & \begin{array}{r} 92 \overline{) 7} \\ 17 \overline{) 9} \end{array}
 \end{array}$$

Abbreviate or reduce the following Fractions to their lowest Name or least Term.

$\frac{12}{16}$ is equal to $\frac{3}{4}$	$\frac{4}{16}$ is equal to $\frac{1}{4}$
$\frac{5}{25}$ _____ $\frac{1}{5}$	$\frac{3}{9}$ _____ $\frac{1}{3}$
$\frac{24}{36}$ _____ $\frac{2}{3}$	$\frac{16}{48}$ _____ $\frac{1}{3}$
$\frac{45}{60}$ _____ $\frac{3}{4}$	$\frac{114}{385}$ _____ $\frac{2}{5}$
$\frac{34}{51}$ _____ $\frac{2}{3}$	$\frac{619}{3251}$ _____ $\frac{1}{5}$
$\frac{144}{216}$ _____ $\frac{2}{3}$	

Abbreviate

Abbreviate or reduce $\frac{59}{83}$ to its lowest Name.
Ans. There is no lower, as appears by the following Work.

$$\begin{array}{l} \frac{56}{83} \left\{ \begin{array}{l} 3 \\ 233 \end{array} \right. \\ \frac{3}{89} \left\{ \begin{array}{l} 1 \\ 86 \end{array} \right. \\ \frac{2}{86} \left\{ \begin{array}{l} 18 \\ 83 \end{array} \right. \\ \frac{1}{8} \left\{ \begin{array}{l} 1 \\ 2 \end{array} \right. \end{array}$$



C H A P. XI.

Addition of FRACTIONS.

S E C T. I.

OF Simple Fractions which have one common Denominator.

Rule 1. Add their Numerators together, and place the Sum over one of the given Denominators.

Example.

Add $\frac{3}{5}$ to $\frac{1}{5}$ *Ans.* $\frac{4}{5}$.

Thus.

$$\frac{1}{5} \\ + \frac{3}{5} \\ \hline$$

Ans. $\frac{4}{5}$

Add the following Fractions together, viz.

$\frac{2}{7}$ and $\frac{4}{7}$	the Sum is $\frac{6}{7}$	$\frac{7}{24}$, $\frac{11}{24}$, and $\frac{13}{24}$	Sum is $\frac{30}{24}$
$\frac{3}{9}$ and $\frac{4}{9}$	_____	$\frac{11}{20}$, $\frac{7}{20}$, and $\frac{9}{20}$	_____
$\frac{3}{10}$ and $\frac{1}{10}$	_____	$\frac{1}{14}$, $\frac{11}{14}$, and $\frac{9}{14}$	_____
$\frac{5}{12}$ and $\frac{1}{12}$	_____	$\frac{15}{16}$, $\frac{13}{16}$, $\frac{11}{16}$, and $\frac{7}{16}$	_____

H.

— II. —

Of mixt Numbers with one common Denominator.

Rule 2. *By Rule 1, add the fractional Parts and the Integers as in whole Numbers.*

Example.

Add $17\frac{3}{5}$ to $12\frac{1}{5}$ *Answ.* $29\frac{4}{5}$

The Work.

$17\frac{3}{5}$

$12\frac{1}{5}$

Sum $29\frac{4}{5}$

Sums to be added, *viz.*

$13\frac{1}{3}$, $9\frac{4}{3}$, $3\frac{7}{3}$, and 5. The Sum is $30\frac{4}{3}$
 $1\frac{1}{2}$, $2\frac{5}{2}$, $3\frac{7}{2}$, and $4\frac{1}{2}$, 12
 $9\frac{3}{4}$, $7\frac{9}{4}$, $5\frac{5}{4}$, 16, 8, and $1\frac{1}{4}$, $47\frac{5}{4}$

— III. —

To add Fractions which have no common Denominator.

This may be done two ways, *viz.*

Rule 3. *Multiply all the Denominators together, and the Product will be a common Denominator, in which divide each particular Denominator, whose Quotient multiply by its Numerator, and those Products being added together, is a new Numerator to the common Denominator, and total Sum required.*

Example.

Example.

Add $\frac{3}{8}$, $\frac{5}{9}$ and $\frac{7}{12}$ together.

Com. 864 Denomi.

8		
9	$\frac{3}{8}$	324
—	$\frac{5}{9}$	480
72	$\frac{7}{12}$	504
12		—
—		1308
864	divide	equal to $1\frac{7}{12}$.
	864	

But it is best to find the least common Denominator, which will shorten the Work. Thus,

Rule 4. *If there are two or more of the given Denominators that can be divided by any one Number, divide them, and if their Quotients are capable of being divided by any Number or in themselves, divide once more, and when you can divide no more, multiply the last Quotients by one another, and the Product multiply by the last Divisor or Divisors, and you have the least common Denominator required.*

Example II.

As before, let $\frac{3}{8}$, $\frac{5}{9}$, and $\frac{7}{12}$ be added together.

Com. 72 Denomi.	$\frac{3}{8} : 9 : 27$
$\frac{3}{8}$ - - - - -	$\frac{5}{9} : 8 : 40$
$\frac{5}{9}$ - - - - -	$\frac{7}{12} : 6 : 42$
$\frac{7}{12}$ - - - - -	—
	109
Ans. —	equal $1\frac{7}{12}$
72	

The least Com. 72 Denomi.
Add

Add the following Fractions together, viz.

$\frac{5}{6}$ and $\frac{2}{3}$	the Sum is	$1\frac{1}{2}$	$\frac{1}{3}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7},$ and $\frac{1}{8},$	<i>Answ.</i>	$2\frac{71}{280}$
$\frac{1}{4}$ and $\frac{1}{12}$	_____	$1\frac{2}{3}$	$\frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{3}{8},$ and $\frac{8}{11}$	_____	$3\frac{5477}{240}$
$\frac{1}{8}$ and $\frac{5}{6}$	_____	$2\frac{3}{24}$	$\frac{1}{5}, \frac{7}{8}, \frac{7}{12},$ and $\frac{5}{24},$	_____	$6\frac{719}{280}$
$\frac{1}{4}, \frac{5}{6},$ and $\frac{7}{8}$	_____	$2\frac{11}{24}$	$\frac{1}{3}, \frac{1}{4}, \frac{1}{13},$ and $\frac{1}{15}$	- - - -	$1\frac{1049}{1300}$

— IV. —

The Use.

1. A Merchant bought 5 Pieces of Cloth, the first $40\frac{3}{4}$ Yards long, the second $38\frac{1}{2}$ Yards, the third $40\frac{3}{8}$ Yards, the fourth $41\frac{1}{16}$ Yards, the fifth $42\frac{1}{4}$ Yards. I demand how many Yards there were in all? *Answ.* $202\frac{1}{8}$ Yards.

2. Another Merchant sold 4 Bales of Spice, No. 1, wt. $150\frac{1}{2}$ lb. No. 2, wt. $139\frac{3}{4}$ lb. No. 3, wt. $162\frac{2}{3}$ lb. No. 4, $170\frac{1}{8}$ lb. I demand how many lb. they weighed together? *Answ.* $623\frac{1}{4}$ lb.

3. A Grocer sold the following Parcels of Sugar, viz. $16\frac{1}{2}$ lb. $19\frac{3}{4}$ lb. $13\frac{3}{4}$ lb. $20\frac{1}{8}$ lb. $25\frac{1}{8}$ lb. $30\frac{5}{8}$ lb. and $11\frac{1}{4}$ lb. I demand how many lb. he sold in all? *Answ.* $136\frac{7}{8}$ lb.



C H A P. XII.

MULTIPLICATION OF FRACTIONS.

S E C T. I.

TO Multiply a Simple FRACTION by a Simple FRACTION.

Rule I. Multiply the Numerators together for a new Numerator, and the Denominators together, for a new Denominator, and 'tis done.

Example.

Example.

$\frac{3}{4}$ Multiplied by $\frac{5}{8}$ produces $\frac{15}{32}$.

Thus,

$$\begin{array}{r} 3 \text{ --- } 5 \\ \hline 4 \text{ --- } 8 \\ \hline \end{array}$$

Product $\frac{15}{32}$

Multiply the following Fractions.

$\frac{7}{8}$ by $\frac{5}{6}$	Product - - - - - $\frac{35}{24}$	$\frac{14}{15}$ by $\frac{5}{8}$	Product - - - - - $\frac{7}{6}$
$\frac{1}{2}$ by $\frac{2}{3}$	- - - - - $\frac{1}{3}$	$\frac{128}{135}$ by $\frac{5}{12}$	- - - - - $\frac{32}{81}$
$\frac{1}{4}$ by $\frac{4}{5}$	- - - - - $\frac{1}{5}$	$\frac{13}{14}$ by $\frac{7}{5}$	- - - - - $\frac{13}{10}$
$\frac{5}{8}$ by $\frac{1}{2}$	- - - - - $\frac{5}{16}$	$\frac{314}{453}$ by $\frac{177}{316}$	- - - - - $\frac{55583}{23858}$

— II. —

To multiply whole Numbers, by a Simple Fraction.

Rule 2. Make the Integer like a Fraction, by putting 1 under it, then proceed as before.

Example.

How much is 3 Times $\frac{1}{4}$? *Answ.* $\frac{3}{4}$.

Thus,

$$\begin{array}{r} 3 \text{ --- } 1 \\ \hline 1 \text{ --- } 4 \\ \hline \end{array}$$

$\frac{3}{4}$

$$\begin{array}{r} 3 \overline{) 75} \\ \underline{60} \\ 15 \end{array}$$

Sums to be Multiplied,

5 by $\frac{1}{2}$	the Product is $\frac{5}{2}$	7 by $\frac{3}{4}$	Product - - - - - $5\frac{1}{4}$
18 by $\frac{2}{3}$	- - - - - 4	16 by $\frac{5}{6}$	- - - - - $13\frac{1}{3}$
48 by $\frac{5}{12}$	- - - - - 20	34 by $\frac{15}{16}$	- - - - - $31\frac{7}{8}$
8 by $\frac{2}{3}$	- - - - - $5\frac{1}{3}$	100 by $\frac{13}{24}$	- - - - - $54\frac{1}{6}$

— III. —

— III. —

To Multiply a mixt Number by a Simple Fraction, or a whole Number.

Rule 3. Reduce the mixt Number into an improper Fraction, by multiplying the Integral Part by the Denominator of the Fractional Part, and to the Product add the Numerator of the said Fractional Part, the Sum is a Numerator to the former Denominator, then proceed as before.

Example.

If $4\frac{1}{2}$ are multiplied by 6, the Product is 27.

Thus,

$$\begin{array}{r}
 4\frac{1}{2} \\
 \hline
 9 \text{ --- } 6 \\
 \hline
 2 \text{ --- } 1 \\
 \hline
 34 \left\{ \begin{array}{l} 27 \\ 22 \end{array} \right.
 \end{array}$$

or Thus.

$$\begin{array}{r}
 6 \\
 4\frac{1}{2} \\
 \hline
 24 \\
 3 \\
 \hline
 27
 \end{array}$$

Multiply the following Sums, viz.

8 by $5\frac{2}{3}$ Prod. $45\frac{1}{3}$	$\frac{3}{4}$ by $8\frac{1}{2}$ Prod. - - - $6\frac{1}{4}$
$7\frac{1}{8}$ by 12 - - $85\frac{1}{2}$	$12\frac{1}{2}$ by $\frac{3}{8}$ - - - $4\frac{1}{2}$
20 by $10\frac{7}{9}$ - $215\frac{5}{9}$	$\frac{1}{3}$ by $10\frac{1}{2}$ - - - $7\frac{1}{6}$
$5\frac{5}{8}$ by 100 - $583\frac{1}{3}$	$\frac{1}{8}$ by $30\frac{4}{5}$ - - - $28\frac{7}{8}$

— IV. —

To Multiply mixt Numbers by mixt Numbers.

Rule 4. Reduce them into improper Fractions, by the 3d Rule, and proceed as before.

Example.

Example.

How much is $5\frac{1}{2}$ Times $6\frac{3}{4}$? *Ans*w. $37\frac{1}{8}$.

$$\begin{array}{r} \text{II} \quad \text{---} \quad 27 \\ \text{---} \quad \text{---} \quad \text{---} \\ 2 \quad \quad \quad 4 \\ \text{---} \quad \text{---} \quad \text{---} \end{array}$$

$$\begin{array}{l} 8(1 \\ 297 \\ 88 \end{array} \left\{ 37\frac{1}{8} \right.$$

Multiply the following Sums, *viz.*

$37\frac{1}{8}$ by $3\frac{5}{8}$	Product	- - - - -	$142\frac{5}{16}$
$2\frac{1}{7}$ by $31\frac{1}{9}$	- - - - -	- - - - -	$92\frac{284}{323}$
$19\frac{4}{5}$ by $17\frac{7}{2}$	- - - - -	- - - - -	$338\frac{139}{100}$
$35\frac{1}{6}$ by $11\frac{1}{2}$	- - - - -	- - - - -	$418\frac{29}{100}$

—V.—

To Multiply compound Fractions, observe the first Rule.

Example.

How much is $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{5}$? *Ans*w. $\frac{1}{40}$.

$\text{I} \quad \text{---} \quad \text{I} \quad \text{---} \quad \text{I}$	4
$\text{---} \quad \text{---} \quad \text{---}$	2
$2 \quad \text{---} \quad 4 \quad \text{---} \quad 5$	8
$\text{---} \quad \text{---} \quad \text{---}$	5
<i>Ans</i> w. $\frac{1}{40}$	40

Multiply

Multiply the following Fractions, viz.

$\frac{7}{8}$ of $\frac{1}{3}$ by $\frac{2}{3}$	The Product is	$\frac{7}{60}$
$\frac{1}{2}$ of $\frac{1}{4}$ by 16		2
$\frac{2}{3}$ of $\frac{3}{7}$ by $1\frac{1}{2}$		$\frac{11}{70}$
$\frac{3}{4}$ of $\frac{1}{3}$ by $11\frac{7}{8}$		$2\frac{31}{32}$
$\frac{5}{8}$ of $3\frac{4}{7}$ by 8		$12\frac{1}{2}$

— VI. —

The Use.

1. How many Pence are in $\frac{5}{8}$ of a Shilling?
Answ. 10d.

Example.

$$\begin{array}{r}
 s. \quad d. \\
 5 \text{ ——— } 12 \\
 \hline
 6 \text{ ——— } 1 \\
 \hline
 60 \text{ } \left\{ \begin{array}{l} 10d. \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 s. \quad d. \\
 5 \quad 12 : 2 \\
 \hline
 6 \text{ ——— } 1 \\
 \hline
 10d.
 \end{array}$$

2. How many Pence are in $\frac{2}{3}$ of a Shilling?
Answ. 8d.

3. How many Shillings are in $\frac{4}{5}$ of a £ . Sterling?
Answ. 16s.

4. How much is the $\frac{1}{8}$ of a Hundred Weight?
Answ. 14lb.

5. What is the Value of $1\frac{1}{8}$ of a £ . Sterling?
Answ. 13s. 9d.

6. How much is $\frac{2}{7}$ of a Hundred Weight? *Answ.* 32lb.

7. What

7. What is the $\frac{5}{8}$ of a *l.* Sterling? *Answ.* 12*s.* 6*d.*

8. How much is the $\frac{5}{8}$ of a *lb.* Avoirdupois?
Answ. 10 oz.

— VII. —

9. What is the Value of $\frac{1}{4}$ of $\frac{3}{4}$ of a Shilling?
Answ. $2\frac{1}{4}d.$

Example.

$$\begin{array}{r} \text{s.} \quad \text{d.} \\ 1 \text{ --- } 3 \text{ --- } 12 \\ \text{---} \quad \text{---} \\ 4 \text{ --- } 4 \text{ --- } 1 \\ \hline \end{array}$$

$$\begin{array}{r} \text{or thus.} \\ 9 \text{ --- } 1 \\ \text{---} \quad \text{---} \\ 1 \text{ --- } 4 \\ \hline \end{array}$$

$$\frac{4}{36} \left\{ \frac{3}{16} = 2\frac{1}{4} \right.$$

$$\frac{1}{9} \left\{ \frac{3}{4} = 2\frac{1}{4} \right.$$

10. What is the Value of $\frac{7}{8}$ of $\frac{3}{4}$ of a *l.* Sterling?
Answ. 13*s.* $1\frac{1}{2}d.$

11. How much is $\frac{3}{8}$ of $\frac{2}{3}$ of a *l.* Sterling? *Answ.* 2*s.* 6*d.*

12. If one Yard of Cloth cost 17*d.* what will half a Quarter come to? *Answ.* $2\frac{1}{8}d.$

13. What will $\frac{1}{3}$ of $\frac{3}{4}$, of an Ounce Avoirdupois, come to at 7*s.* the *lb.*? *Answ.* $1\frac{5}{8}d.$

— VIII. —

14. If 1 Yard of Cloth cost 2*s.* 6*d.* what will $2\frac{1}{2}$ Yards come to? *Answ.* 6*s.* 3*d.*

Multiplication of Fractions.

Example.

$$\begin{array}{r} \text{Yds.} \quad s. \\ 2\frac{1}{2} \quad 2\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 5 \text{ --- } 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \text{ --- } 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ 2\frac{1}{2} \left\{ \begin{array}{l} 6\frac{1}{4} s. \\ 4 \end{array} \right. \end{array}$$

Or thus,

$$\begin{array}{r} 2\frac{1}{2} \\ 2\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ 1\frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \hline \end{array}$$

$$6\frac{1}{4} s.$$

15. What will $6\frac{1}{2} lb.$ of Indigo come to, at $5s. 6d.$ the $lb.$? *Ans.* $1l. 14s. 4\frac{1}{2}d.$

16. If 1 Ounce of Silk cost $7\frac{3}{4}d.$ what will $3\frac{1}{4}$ Ounces come to? *Ans.* $2s. 1\frac{3}{4}d.$

17. How much will 10 Yards, and half a Quarter of Cloth come to, at the Rate of $11\frac{3}{4}s.$ the Yard? *Ans.* $5l. 18s. 11\frac{5}{8}d.$

18. How many square Feet are in a Plank of $20\frac{1}{2}$ Feet long, and 15 Inches broad? *Ans.* $25\frac{5}{8}$ Feet.

19. How many square Yards are in a Wainscot of 9 Feet 8 Inches high, and 15 Feet 3 Inches broad? *Ans.* 16 Yards $3\frac{5}{12}$ Feet.

— IX. —

20. What would the Workmanship of a Wall come to, of $60\frac{1}{2}$ Perches long, and $\frac{1}{4}$ Perch high at $8\frac{1}{2}d.$ the Perch? *Ans.* $10s. 8\frac{2}{3}d.$

Example.

Example.

$$\begin{array}{r}
 60\frac{1}{2} \\
 \hline
 121 \text{ --- } 1 \text{ --- } 17 \\
 \hline
 2 \text{ --- } 4 \text{ --- } 2 \\
 4 \quad 121 \\
 2 \quad 17 \\
 \hline
 8 \quad 847 \\
 2 \quad 121 \\
 \hline
 16 \quad 48(9 \left\{ \begin{array}{l} 128 \\ 222 \\ 22 \end{array} \right. \left\{ \begin{array}{l} 18 \\ 10:8\frac{2}{16} \end{array} \right. \left\{ \begin{array}{l} s. \quad d. \quad 10:8\frac{2}{16} \end{array} \right.
 \end{array}$$

or this way,

$$\begin{array}{r}
 60\frac{1}{2} \\
 \hline
 4 \quad \left\{ \begin{array}{l} 15\frac{1}{8} \\ 8\frac{1}{2} \end{array} \right. \\
 \hline
 120 \\
 7\frac{1}{2} \\
 1\frac{1}{16} \\
 \hline
 128\frac{2}{16} \\
 22 \text{ --- } 22
 \end{array}$$

21. A Floor of $3\frac{1}{2}$ Yards broad, and $5\frac{1}{3}$ Yards long, being laid with Stones at the Rate of $5\frac{1}{2} s.$ the square Yard, what does it amount to? *Ans.* 5*l.* 2*s.* 8*d.*

22. How much would the painting of a wain-scotted Room come to, of 16 Feet square, and 11 Feet high, at the Rate of $6\frac{1}{2} d.$ the square Yard? *Ans.* 2*l.* 2*s.* $4\frac{4}{9} d.$

23. How much will an Oak Plank come to, of $20\frac{1}{2}$ Feet long, $1\frac{1}{4}$ Feet broad, at $6\frac{1}{2} d.$ the square Foot? *Ans.* 13*s.* $10\frac{2}{16} d.$

24. How many Cubical Feet are in 100 Stones of 28 Inches long, 21 Inches broad, and 8 Inches thick? *Ans.* $272\frac{2}{3}$ Feet.

25. How many Cubical Feet are in a Beam of $22\frac{1}{4}$ Feet long, 13 Inches broad, and 8 Inches thick? *Ans.* $16\frac{5}{12}$ Feet.

26. What will $7\frac{1}{8}$ oz. of Silver come to, if 1 oz. cost $5\frac{1}{4}s.$? *Ans.* 1*l.* 17*s.* $4\frac{1}{2}d.$

27. A has $\frac{1}{2}$ of a Ship, of which he sells to B $\frac{1}{4}$, and B sells out of his Share to C $\frac{1}{2}$. I demand what Share C has in the Ship, and also A and B's Shares? *Ans.* A $\frac{1}{8}$, B $\frac{3}{16}$, and C $\frac{3}{16}$.

28. How many Tiles of 12 Inches square would lay a Floor of $15\frac{3}{4}$ Feet broad, and $17\frac{1}{4}$ long? *Ans.* $271\frac{11}{16}$ Tiles.

29. Suppose a Marble Stone of $6\frac{1}{2}$ Feet long, $4\frac{3}{4}$ Feet broad, $2\frac{1}{3}$ Feet thick, was sold at the Rate of $5\frac{1}{2}s.$ the Cubical Foot. I demand what it would amount to? *Ans.* 19*l.* 16*s.* $2\frac{3}{4}d.$

30. If 1 Ounce of Gold is worth 4*l.* what is 1 Grain worth? *Ans.* 2*d.*

Note. The above Sum can be solved (the stating the Question excepted) by one Figure, which is the Answer.



C H A P. XIII.

Subtraction of FRACTIONS.

S E C T. I.

TO Subtract Simple Fractions, from Simple Fractions, which have one common Denominator.

Rule 1. Subtract the lesser Numerator from the greater, and under the Remainder put the Denominator.

Examples.

Examples.

From	$\frac{5}{7}$	$\frac{5}{8}$	$1\frac{1}{2}$	$1\frac{5}{6}$	$1\frac{7}{35}$	$10\frac{1}{2}$
Take	$\frac{2}{7}$	$\frac{3}{8}$	$\frac{5}{12}$	$\frac{3}{6}$	$\frac{13}{35}$	$20\frac{5}{9}$
Rest	$\frac{3}{7}$	$\frac{2}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{4}{35}$	$20\frac{6}{9}$

II.

To subtract a Fraction, or mixt Number from a whole Number.

Rule 2. Take the Numerator from the Denominator, and under the Remainder put the Denominator, and carry one to be subtracted from the whole Number.

Examples.

From	1	3	6	10	9	100
Take	$0\frac{3}{5}$	$0\frac{3}{8}$	$0\frac{7}{8}$	$0\frac{1}{10}$	$5\frac{1}{2}$	$99\frac{9}{10}$
Rest	$0\frac{2}{5}$	$2\frac{5}{8}$	$5\frac{1}{8}$	$9\frac{9}{10}$	$3\frac{1}{2}$	$0\frac{1}{10}$

III.

To subtract mixt Numbers from mixt Numbers having common Denominators.

Rule 3. By Rule the first Subtract the Fractional Part, and then Subtract the Integer.

Examples.

From	$3\frac{1}{2}$	$100\frac{3}{4}$	$19\frac{5}{6}$	$97\frac{19}{24}$	$99\frac{21}{24}$
Take	$2\frac{1}{3}$	$10\frac{3}{4}$	$11\frac{7}{6}$	$8\frac{11}{24}$	$7\frac{19}{24}$
Rest	$1\frac{1}{3}$	90	$8\frac{1}{2}$	$89\frac{1}{3}$	$92\frac{1}{2}$

IV.

— IV. —

To subtract Simple Fractions which have no common Denominator.

Rule 4. By the third or fourth Rule of the third Section of Addition of Fractions, find a common Denominator, in which divide each particular Denominator, whose Quotient multiply by its Numerator, and those Products subtract, and the Remainder is a new Numerator, to the common Denominator, and the Answer required.

Example.

What diff. $\frac{2}{3}$ from $\frac{7}{9}$? *Ans.* $\frac{1}{9}$.

$$\begin{array}{r} 9 \\ 7 \overline{) 63} \\ \underline{63} \\ 0 \end{array}$$

Subtract the following Fractions.

From	$\frac{5}{8}$	$1\frac{1}{2}$	$\frac{5}{6}$	$1\frac{4}{5}$	$\frac{8}{13}$	$\frac{17}{24}$	$\frac{209}{216}$
Take	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{9}{20}$	$\frac{9}{14}$	$\frac{7}{144}$
Rest	$\frac{3}{8}$	$\frac{1}{6}$	$\frac{1}{30}$	$\frac{1}{3}$	$\frac{1}{12}$	$\frac{7}{6}$	$\frac{397}{432}$

— V. —

To subtract a Fraction or mixt Number from a mixt Number, when the fractional Part to be subtracted is greater than the fractional Part from whence it is to be subtracted.

Rule 5. Find a common Denominator, &c. as in the preceding Section, then add the new found Numerator of the lesser Fraction, to the common Denominator,

nator, and from that Sum subtract the new found Numerator of the greater Fraction, and the Remainder set as a new Numerator over the common Denominator, then carry one to the integral Part of the Subtrahend, and subtract, as in whole Numbers.

Example.

Subtract $2\frac{1}{3}$ from $5\frac{1}{4}$ remain $2\frac{1}{2}$.

$$\begin{array}{r} \overset{12}{\text{---}} \\ 5\frac{1}{4} \text{---} 3 \text{ and } 12 \text{ are } 15 \\ 2\frac{1}{3} \text{---} 4 \\ \hline 2\frac{1}{2} \end{array} \qquad \begin{array}{r} 4 \\ \hline 1\frac{1}{2} \end{array}$$

More Examples, as before, viz.

From	$6\frac{2}{7}$	$10\frac{3}{8}$	$12\frac{5}{2}$	$19\frac{5}{1}$	$13\frac{1}{9}$
Take	$0\frac{7}{7}$	$1\frac{7}{2}$	$6\frac{1}{2}$	$0\frac{7}{3}$	$9\frac{1}{7}$
Rest	$5\frac{6}{7}$	$8\frac{4}{8}$	$5\frac{1}{2}$	$18\frac{16}{3}$	$3\frac{5}{9}$

— VI. —

What differs $\frac{9}{14}$ from $\frac{17}{21}$? *Ans*w. - - - - - $\frac{1}{6}$
 What does $\frac{7}{44}$ differ from $\frac{209}{216}$? *Ans*w. - - - - - $\frac{327}{432}$
 What Difference is there betwixt $10\frac{7}{8}$ and $12\frac{1}{2}$? *Ans*. $1\frac{5}{8}$
 Take $10\frac{1}{2}$ from $100\frac{1}{2}$ remain - - - - - $89\frac{1}{2}$
 What differs $\frac{9}{6}$ from $\frac{1}{3}$? *Ans*w. - - - - - $\frac{1}{3}$
 What does $\frac{9}{20}$ differ from $\frac{8}{15}$? *Ans*w. - - - - - $\frac{1}{12}$

*** * NOTE,** If one cannot distinguish the greater of two Fractions, that whose Numerator being multiplied by the Denominator of the other Fraction, makes the greatest Number, is the greatest Fraction.

— II. —

To divide a whole Number by a Simple Fraction, and the contrary.

Rule 2. *Make the whole Number an improper Fraction by putting an Unit for a Denominator, and proceed as before.*

Example.

Divide 4 by $\frac{1}{2}$ the Quotient is 8.

Dividend Divisor

$$\begin{array}{r} 4 \quad \frac{1}{2} \\ \hline 1 \quad 2 \end{array} \quad \begin{array}{c} \diagup \quad \diagdown \\ \diagdown \quad \diagup \end{array}$$

$$\frac{8}{1} \left\{ 8 \right.$$

Divide the following Fractions, viz.

$\frac{1}{2}$ by 4 comes - - - - - $\frac{1}{8}$	1 by $\frac{1}{3}$ comes - - 3
8 by $\frac{3}{4}$ - - - - - $10\frac{2}{3}$	$\frac{5}{6}$ by 15 - - - - - $12\frac{1}{2}$
$\frac{3}{4}$ by 8 - - - - - $3\frac{1}{2}$	24 by $\frac{5}{8}$ - - - - - $38\frac{2}{5}$
10 by $\frac{5}{6}$ - - - - - 12	$\frac{5}{6}$ by 100 - - - - - $11\frac{1}{6}$

— III. —

To divide a mixt Number by a Simple Fraction, and the contrary.

Rule 3. *Reduce the mixt Number into an improper Fraction, by Rule 3, of Multiplication of Fractions, and proceed as before.*

Example.

Example.

How often is $\frac{1}{2}$ contained in $2\frac{1}{2}$? *Answ.* 5 Times.

$$2\frac{1}{2}$$

$$\text{or } 2\frac{1}{2}$$

$$\begin{array}{r} 5 \\ \hline 2 \end{array} \begin{array}{r} 1 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ \hline 2 \end{array} \begin{array}{r} 1 \\ \hline 2 \end{array}$$

$$2\overline{)5} \left\{ 5 \right.$$

Answ. 5

Divide the following Fractions, viz.

$3\frac{1}{8}$ by $\frac{3}{8}$	<i>Answ.</i> -- $8\frac{1}{3}$	$4\frac{1}{2}$ by $\frac{3}{4}$	<i>Answ.</i> -- -- -- 6
$\frac{3}{4}$ by $4\frac{1}{2}$	-- -- -- $\frac{3}{10}$	$\frac{3}{8}$ by $3\frac{1}{8}$	-- -- -- $\frac{3}{8}$
$12\frac{1}{2}$ by $1\frac{5}{8}$	-- -- -- $43\frac{3}{8}$	$2\frac{1}{3}$ by $\frac{7}{8}$	-- -- -- $2\frac{2}{3}$
$\frac{7}{8}$ by $2\frac{1}{3}$	-- -- -- $\frac{3}{8}$	$\frac{5}{4}$ by $2\frac{1}{7}$	-- -- -- $\frac{1}{6}$

— IV. —

To divide a whole Number by a mixt Number, and the contrary.

Rule 4. Reduce both the whole Number and mixt Number into improper Fractions, and proceed as before.

Example.

Divide 3 by $4\frac{1}{3}$, the Product is $\frac{3}{5}$.

$$\begin{array}{r} 4\frac{1}{3} \\ \hline 3 \end{array} \begin{array}{r} 24 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 3 \\ \hline 28 \overline{)5} \\ 24 \\ \hline 8 \end{array}$$

Divide

Divide the following Fractions, viz.

7 by $8\frac{5}{8}$	Quotient - $\frac{56}{9}$	108 by $6\frac{3}{7}$	Quot. - $16\frac{4}{5}$
$25\frac{1}{2}$ by 5	- - - $5\frac{1}{10}$	$119\frac{1}{4}$ by 8	- - - $14\frac{2}{3}$
34 by $3\frac{7}{9}$	- - - 9	25 by $3\frac{1}{5}$	- - - $7\frac{1}{6}$
$1\frac{1}{9}$ by 15	- - - $0\frac{2}{27}$	$9\frac{3}{7}$ by 11	- - - $0\frac{6}{7}$

— V. —

To divide mixt Numbers by mixt Numbers.

Rule 5. Reduce them both into improper Fractions, and proceed as before.

Example.

Divide $5\frac{1}{3}$ by $6\frac{1}{2}$, the Product is $\frac{32}{39}$.

$$\begin{array}{r} \overline{16} \quad \quad \overline{13} \\ \quad \quad \quad \times \\ \overline{3} \quad \quad \quad \overline{2} \end{array}$$

Ans. $\frac{32}{39}$.

Divide the following Sums, viz.

$9\frac{3}{4}$ by $13\frac{1}{2}$	Quotient $\frac{13}{18}$	$10\frac{5}{6}$ by $4\frac{2}{3}$	Quot. - $2\frac{9}{8}$
$1\frac{1}{3}$ by $5\frac{5}{9}$	- - - $\frac{21}{86}$	$60\frac{9}{16}$ by $26\frac{11}{12}$	- - - $2\frac{1}{4}$
$6\frac{1}{2}$ by $5\frac{1}{3}$	- - - $1\frac{7}{12}$	$1\frac{1}{2}$ by $2\frac{1}{2}$	- - - $0\frac{3}{5}$

— VI. —

The Use.

1. WHAT Part is 9s. of a l. Sterling? Ans. $\frac{2}{5}$

$$\begin{array}{r} \text{s.} \quad \quad \text{s.} \\ \overline{9} \quad \quad \quad \overline{20} \\ \quad \quad \quad \times \\ \overline{1} \quad \quad \quad \overline{1} \end{array}$$

Ans. $\frac{2}{5}$

K

2. What

2. What Part of a *l.* Sterling is 15*s.*? *Answ.* $\frac{3}{4}$ *l.*
 3. What Part of a *lb.* Troy is 4 *oz.*? *Answ.* $\frac{1}{3}$ *lb.*
 4. What Part of an *Ct.* is 84*lb.*? *Answ.* $\frac{3}{4}$.
 5. What Part of a Tun is 4 *Ct.*? *Answ.* $\frac{1}{3}$.
 6. What Part of a Shilling is 8*d.*? *Answ.* $\frac{2}{3}$.

— VII. —

7. What Part of a Shilling is $\frac{1}{2}$ *d.*? *Answ.* $\frac{1}{24}$.

$$\begin{array}{r} \text{d.} \qquad \text{d.} \\ 1 \qquad 12 \\ \hline 2 \qquad 1 \\ \hline \end{array}$$

Answ. $\frac{1}{24}$.

8. What Part of a *lb.* is $\frac{3}{4}$ of an Ounce Avoirdupois Wt.? *Answ.* $\frac{3}{64}$.

9. What Part of a Penny is the $\frac{1}{2}$ of a Farthing? *Answ.* $\frac{1}{8}$.

10. What Part of a Shilling is $\frac{3}{4}$ *d.*? *Answ.* $\frac{3}{48}$.

11. What Part of a *l.* Sterling is $\frac{5}{6}$ *s.*? *Answ.* $\frac{1}{24}$.

12. What Part of a *Ct.* is $\frac{1}{4}$ *lb.*? *Answ.* $\frac{1}{48}$.

13. What Part of a *lb.* Troy is $\frac{1}{4}$ of an Ounce? *Answ.* $\frac{1}{8}$.

— VIII. —

14. What Part of a *l.* Sterling is 2*s.* 6*d.*? *Answ.* $\frac{1}{4}$.

$$\begin{array}{r} 2\frac{1}{2}\text{s.} \qquad \text{s.} \\ 8 \qquad 20 : 4 \\ \hline 2 \qquad 1 \\ \hline \end{array}$$

Answ. $\frac{1}{8}$.

15. What

Division of Fractions.

111

15. What Part of a *l.* is 6*s.* 8*d.* ? *Ans*w. $\frac{1}{3}$.
16. What Part of a Shilling is 1½*d.* ? *Ans*w. $\frac{1}{8}$.
17. What Part of a *l.* is 3*s.* 4*d.* ? *Ans*w. $\frac{1}{6}$.
18. What Part of a *l.* is 12*s.* 6*d.* ? *Ans*w. $\frac{5}{8}$.
19. What Part is 1½ Pint of a Gallon ? *Ans*w. $\frac{3}{16}$.
20. What Part is 8*s.* 9*d.* of a *l.* ? *Ans*w. $\frac{7}{16}$.
21. What Part is 5¼*d.* of a Shilling ? *Ans*w. $\frac{7}{16}$.

— IX. —

22. What Part is 6*s.* 2½*d.* of a *l.* Sterling ? *Ans*w. $\frac{149}{480}$.

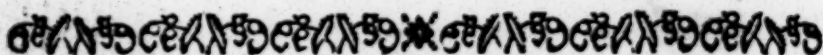
Example.

$$\begin{array}{r}
 \begin{array}{cc}
 s. & d. \\
 6 & : 2\frac{1}{2} \\
 12 & \\
 \hline
 74\frac{1}{2}
 \end{array} \\
 \hline
 \begin{array}{ccc}
 149 & & 240\ d. \\
 \hline & & \hline
 2 & & 1
 \end{array}
 \end{array}$$

*Ans*w. $\frac{149}{480}$

23. What Part of a *l.* Sterling is 11*s.* 4½*d.* ?
*Ans*w. $\frac{91}{160}$.
24. What Part is 3*qrs.* 7*lb.* of a hundred Wt. ?
*Ans*w. $\frac{13}{16}$.
25. What Part of a *l.* Sterling is 5*s.* 0½*d.* ?
*Ans*w. $\frac{81}{320}$.

26. What Part is 2qrs. 8lb. of a Ct. ? *Ans.* $\frac{4}{7}$.
27. What Part of a Ct. is 4lb. $1\frac{1}{3}$ oz. Avoirdupois ? *Ans.* $\frac{7}{192}$.
28. What Part of a lb. Troy is 7 pwt. and $3\frac{1}{2}$ Grains ? *Ans.* $\frac{11^4}{1320}$.
29. What Part of a Yard is 1 qr. $3\frac{1}{2}$ Nails ? *Ans.* $\frac{5}{32}$.
30. What Part of a Tun is 7 Gallons $3\frac{1}{2}$ qrs. ? *Ans.* $\frac{1}{32}$.
31. What Part of a l. Sterling is nineteen Shillings and 11 Pence three Farthings ? *Ans.* $\frac{23}{60}$.



C H A P. XV.

Questions to exercise Fractions, promiscuously set down.

1. WHAT Part is 176 of 368 ? *Ans.* $\frac{11}{23}$.
2. What Part of $148\frac{2}{3}$ is 124 ? *Ans.* $\frac{5}{6}$.
3. What Part is $28\frac{1}{2}$ of $33\frac{2}{3}$? *Ans.* $\frac{7}{8}$.
4. How many Penny Wts. are in $\frac{5}{8}$ oz. and $5\frac{3}{4}$ Troy wt. ? *Ans.* $18\frac{1}{4}$ pwt.
5. What differs $7\frac{3}{4}d.$ from $3\frac{1}{3}s.$? *Ans.* 2s. $8\frac{1}{4}d.$
6. What will be left if I take $13\frac{5}{8}s.$ and $7\frac{5}{8}d.$ from 1l. Sterling ? *Ans.* 5s. $6\frac{3}{8}d.$
7. What Number is it, that when added to $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{6}$ together, will make $\frac{2}{3}$? *Ans.* $\frac{1}{6}$.
8. What

8. Which of the two is the greater Fraction, $\frac{1}{12}$ or $\frac{1}{16}$? *Ans.* $\frac{1}{12}$ is greater by $\frac{1}{48}$.

9. Of what Number is 176 the $\frac{1}{23}$ Part? *Ans.* 368.

10. How much is $\frac{5}{8}$ of $\frac{7}{9}$ of $\frac{3}{4}$ of 20 Shillings? *Ans.* $7\frac{7}{24}s$.

11. Of what Number is $57\frac{5}{8}$ the $\frac{7}{8}$? *Ans.* Of $66\frac{2}{7}$.

12. What Number is it, to which if you add $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$ and $\frac{7}{12}$, less $\frac{1}{6}$, the Product shall be 2? *Ans.* $\frac{5}{16}$.

13. How often must I multiply $\frac{5}{7}$ by $\frac{3}{5}$, that the Product be $\frac{4}{7}$? *Ans.* $1\frac{2}{7}$ Times.

14. By how much must I multiply $13\frac{2}{3}$ that the Product shall be $49\frac{1}{3}$? *Ans.* $3\frac{2}{3}$.

15. How much is $19\frac{5}{8}s$. and $4\frac{1}{2}d$.? *Ans.* $20s$.

16. If the $\frac{5}{8}$ of a *l.* is $16s$. $8d$. how many Shillings are in *l.*? *Ans.* $20s$.

17. How much is $\frac{3}{8}s$. and $3\frac{2}{3}d$.? *Ans.* $8\frac{1}{6}d$.

18. How many Stones, of $1\frac{3}{4}$ Foot long, $\frac{2}{3}$ Foot broad, and $\frac{3}{4}$ Foot thick, are equal to 50 Stones of $3\frac{1}{2}$ Feet long, $2\frac{1}{2}$ Feet broad, and $1\frac{1}{2}$ Foot thick? *Ans.* $571\frac{3}{7}$.

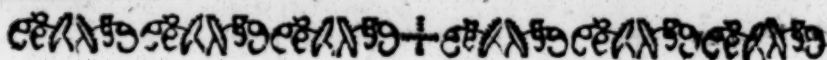
19. What will $\frac{1}{3}$ of $\frac{3}{4}$ of 2 pwt. of Silver come to, at $5s$. $11\frac{3}{4}d$. the oz.? *Ans.* $\frac{1}{160}$.

20. If 1 Yard of Flanders Lace cost $9s$. $3\frac{3}{4}d$. what will $5\frac{3}{4}$ Yards and 3 Nails come to? *Ans.* $2l$. $15s$. $3\frac{3}{8}\frac{3}{4}d$.

21. Find two Numbers, so that the $\frac{1}{18}$ of the one will be as much as the $\frac{7}{8}$ of the other? *Ans.* 126 and 208, or 63 and 144, &c.

114 *The Rule of Three Direct in Fractions.*

22. A Merchant has $\frac{1}{4}$ Share in a Ship, and sells $\frac{1}{2}$ of his Interest therein for 250*l*. I demand the Value of the whole Ship, at that Rate? *Answ.* 1333*l*. 6*s*. 8*d*.



C H A P. XVI.

The Rule of Three Direct, in Fractions.

S E C T. I.

Rule.

1. **A**s in the Rule of Three, in whole Numbers, so likewise in Fractions, let your first and last Number be of one Name.

2. Bring the Denominator of your first Number either under the second or last Number.

3. Bring the Denominator of the second and third Number (being multiplied into one another) under the first Number.

4. If there be any given mixt Numbers, multiply the Integral Parts by the Denominator, and take in the Numerator, then transpose the Denominators, as before.

1. If $\frac{1}{4}$ Yard cost $\frac{2}{3}$ *s*. what will $\frac{2}{3}$ of a Yard come to? *Answ.* $2\frac{1}{3}$ *s*.

Example.

116 *The Rule of Three in Fractions.*

6. If $\frac{4}{7}$ oz. Avoirdupois wt. cost $10\frac{1}{2}d.$ what cost $\frac{5}{14}lb.$? *Answ.* $8s. 9d.$

7. If $19\frac{1}{3}lb.$ cost $17\frac{2}{3}l.$ what Quantity can I have for $\frac{5}{8}s.$? *Answ.* $\frac{2}{3}lb.$

8. What will $\frac{1}{2}Ct.$ come to, if $6\frac{1}{2}Ct.$ cost $21\frac{1}{4}l.$? *Answ.* $1l. 12s. 2\frac{2}{3}d.$

9. If $\frac{1}{2}Ct.$ cost $32s. 2\frac{2}{3}d.$ what will $6\frac{1}{2}Ct.$ come to? *Answ.* $21\frac{1}{4}l.$

10. How many *Ct.* can I have for $21\frac{1}{4}l.$ if $\frac{1}{2}Ct.$ cost $32s. 2\frac{2}{3}d.$? *Answ.* $6\frac{1}{2}Ct.$

11. If $\frac{1}{4}Ct.$ cost $1l. 1\frac{3}{4}s.$ how much can be bought for $38\frac{1}{4}s.$? *Answ.* $1qr. 21\frac{7}{8}lb.$

12. What will $1\frac{1}{2}Ct.$ of Pepper come to, if $15\frac{1}{4}lb.$ cost $12\frac{3}{8}s.$? *Answ.* $6l. 16s. 3\frac{1}{8}d.$

— III. —

13. If $1lb.$ of Silk cost $16\frac{2}{3}s.$ how many *lb.* can I have for $37\frac{1}{2}s.$? *Answ.* $2\frac{1}{4}lb.$

Example.

<i>s.</i>	<i>lb.</i>	<i>s.</i>
$16\frac{2}{3}$	— 1 —	$37\frac{1}{2}$
50		75
2		3
100		

$\left. \begin{array}{r} 25 \\ 228 \\ 200 \end{array} \right\} 2\frac{1}{4}lb.$

14. How

The Rule of Three in Fractions. 117

14. How many *lb.* of Pot-Ashes can I have for $12\frac{1}{4}d.$ if $1lb.$ cost $1\frac{3}{4}d.$? *Ans*w. $7lb.$

15. If $1lb.$ of Coffee cost $2\frac{3}{4}s.$ how many *lb.* can I have for $38\frac{1}{2}s.$? *Ans*w. $14lb.$

16. If for $10\frac{1}{3}s.$ I buy 1 hundred of Oranges, how many hundred can I have for $105\frac{1}{2}s.$? *Ans*w. $10\frac{1}{4}$ Hundred.

———— IV. ————

17. If 1 Ounce of Silver cost $5\frac{2}{3}s.$ what will $\frac{3}{4}$ of an Ounce come to? *Ans*w. $4\frac{1}{4}s.$

Example.

oz.		s.		oz.
1	—	$5\frac{2}{3}$	—	$\frac{3}{4}$
12		3		
		17		
		3		
		3		
		32		
		22		
		}		
				$4\frac{1}{4}s.$

18. What will $\frac{1}{4}$ Yard come to, if 1 Yard cost $13\frac{1}{2}s.$? *Ans*w. $3\frac{3}{8}s.$

19. If $1lb.$ of any thing cost $5\frac{1}{4}s.$ what will $\frac{7}{8}lb.$ come to? *Ans*w. $4s. 7\frac{1}{8}d.$

20. How much will $\frac{1}{4}$ Ct. come to at the Rate of $15\frac{3}{4}s.$ the Ct.? *Ans*w. $3s. 11\frac{1}{4}d.$

———— V. ————

21. If $1lb.$ of Spice cost $\frac{3}{4}s.$ how much will $\frac{7}{8}lb.$ come to?

lb.

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<i>lb.</i>	<i>s.</i>	<i>lb.</i>
1	3	7
32	4	8
		3
		21
		32

Ans. $\frac{21}{32}$ *s.* or $7\frac{7}{8}$ *d.*

22. What will $\frac{1}{4}$ of a *lb.* cost at the Rate of $\frac{5}{8}$ *s.* the *lb.*? *Ans.* $7\frac{7}{8}$ *d.*

23. If 1 *Ct.* cost $\frac{8}{9}$ *l.* what will $\frac{3}{4}$ *Ct.* come to? *Ans.* $\frac{2}{3}$ *l.* or 13 *s.* 4 *d.*

24. What will half a Pint of Brandy cost, if a Gallon cost $\frac{1}{3}$ *l.*? *Ans.* $\frac{1}{6}$ *l.* or 5 *d.*

— VI. —

25. If for $\frac{9}{10}$ *l.* I have 1 Yard of Cloth, how many Yards can I have for $\frac{1}{10}$ *l.*?

<i>l.</i>	<i>Yd.</i>	<i>l.</i>
9	1	15
20	1	26
16	1	10
144	1	6

$\frac{250}{244} \left. \vphantom{\frac{250}{244}} \right\} 1\frac{1}{24}$ *Ans.*

26. What will $\frac{1}{3}$ *lb.* cost, if $\frac{5}{6}$ *lb.* cost 1 *l.* *Ans.* $\frac{2}{5}$ *l.* or 15 *s.*

27. If for $\frac{8}{9}$ *l.* I have 1 *Ct.* how much can I have for $\frac{2}{3}$ *l.*? *Ans.* $\frac{3}{4}$ *Ct.*

28. How

The Rule of Three in Fractions. 119

28. How many Ounces can I have for $\frac{8}{9}s$. if 1 Ounce cost $\frac{2}{3}s$. ? *Answ.* $1\frac{1}{3}oz$.

— VII. —

29. If $\frac{3}{4}$ of a Yard of Cloth cost $\frac{2}{3}l$. what will 1 Yard cost ?

Example.

<i>Yds.</i>	<i>l.</i>	<i>Yd.</i>
3	2	1
4	3	
3	4	
9	<i>Answ.</i> $\frac{8}{9}l$. or 17s. $9\frac{1}{3}d$.	

30. What will 1 Yard of any Thing cost, if $\frac{7}{8}$ of a Yard cost $1\frac{4}{5}l$. ? *Answ.* $1\frac{1}{5}l$.

31. How much will 1 *lb.* cost, if $\frac{2}{3}lb$. cost $\frac{7}{8}s$. ? *Answ.* $1\frac{5}{8}s$.

32. If 3 Penny wts. of Silver cost $\frac{3}{4}s$. what is 1 Ounce worth ? *Answ.* 5s.

— VIII. —

33. If $\frac{5}{6}$ of a *lb.* cost 15d. what cost 1 *lb.* ?

Example.

<i>lb.</i>	<i>d.</i>	<i>lb.</i>
5	15	1
6	6	

$\frac{45}{30} \left\{ \begin{array}{l} 90 \\ 30 \end{array} \right\} 18d. \text{ *Answ.*}$

34. What will 1 Yard come to, if $\frac{3}{4}$ of a Yard cost 18d. ? *Answ.* 24d.

35. If

35. If half a Quarter of Flanders Lace cost 3*s*. what is that a Yard? *Ans*w. 24*s*.

36. How much costs 1*lb*. of Spice, if $\frac{2}{3}$ *lb*. costs 7*s*.? *Ans*w. 10 $\frac{1}{2}$ *s*. or 10*s*. 6*d*.

———— IX. ———

37. If 1 Tun of Tallow cost 35*l*. what costs $\frac{3}{4}$ of a Tun?

		<i>Tuns</i>
<i>Tun</i>	<i>l</i> .	3
1 ———	35 ———	—
4	3	4
	—	
	21	
	208	
	AA	

} *l*.
26 $\frac{1}{4}$ *Ans*w.

38. How much will half a Quarter of a Yard of Lace come to at 46*d*. the Yard? *Ans*w. 5 $\frac{3}{4}$ *d*.

39. If 1 Ounce of Silver cost 5*s*. how much costs $\frac{5}{8}$ of an Ounce? *Ans*w. 3*s*. 1 $\frac{1}{2}$ *d*.

40. At 25*s*. per *Ct*. how much will $\frac{3}{4}$ of a *Ct*. cost? *Ans*w. 18*s*. 9*d*.

———— X. ———

41. If 1 Yard of Linen Cloth cost $\frac{3}{4}$ *s*. what will 1 Piece containing 40 Yards cost? *Ans*w. 30*s*.

	<i>s</i> .	
<i>Yd</i> .	3	<i>Yds</i> .
1 ———	—	40
4	4	3
	—	
	120	
	AA	

} 30*s*.

42. What

The Rule of Three in Fractions. 121

42. What will 7lb. of Cloves cost, if 1 lb. cost 1³/₅l. ? *Ans.* 2l. 2s.

43. At $\frac{5}{8}$ l. per Yard, how much will 42 Yards cost ? *Ans.* 35l.

44. If 1lb. of Sugar cost $\frac{2}{3}$ s. how much will 28 lb. cost ? *Ans.* 18s. 8d.

— XI. —

45. If 1 Yard of Cloth costs 6 $\frac{2}{3}$ s. how much will 789 Yards come to ? *Ans.* 263l.

Yd.	s.	Yds.
1	6 $\frac{2}{3}$	789
3	—	20
	20	—

2	}	526 0
28788		263l.
3333		

46. What will 756lb. of Indigo come to at 3 $\frac{1}{3}$ s. the lb. ? *Ans.* 126l.

47. If 1lb. of Cotton cost 8 $\frac{1}{4}$ d. what will 112lb. come to ? *Ans.* 3l. 17s.

48. How much will 650lb. come to at 3 $\frac{1}{2}$ s. the lb. ? *Ans.* 121l. 17s. 6d.

— XII. —

49. How much will $\frac{1}{2}$ of $\frac{3}{4}$ Yards cost, if $\frac{4}{5}$ Yards cost $\frac{7}{8}$ Ducatoons of 6s. each ? *Ans.* 4s. 5 $\frac{1}{2}$ d.

50. If 3 Times $\frac{5}{6}$ Yards cost 4 Times $\frac{1}{3}$ s. what will 5 Times $\frac{1}{4}$ Yards cost ? *Ans.* 4s.

L

51. What

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51. What will $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{3}{8}$, less $\frac{1}{3}$ lb. come to, if $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{5}{8}$, less $\frac{5}{8}$ lb. cost $\frac{1}{2}$, $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{7}{8}$, less $1\frac{1}{8}$ Crowns at 5s. 5d. per Piece? *Ans.* $12\frac{59}{80}$.

52. A Merchant buys $37\frac{3}{4}$ Ps. of Cloth at $23\frac{1}{2}$ l. the Piece, pays in ready Money $235\frac{1}{4}$ l. and the rest he is to pay in Wool at the Rate of $7\frac{2}{3}$ l. the Stone. I demand how many Stone of Wool he must deliver? *Ans.* $1700\frac{25}{48}$ Stone.

53. Two Ps. of Cloth contain, both together, $79\frac{1}{4}$ Yards, I demand how many Yards are in each Piece, if $\frac{2}{3}$ Yards of the one are as long as $\frac{3}{4}$ Yards of the other? *Ans.* $42\frac{15}{8}$ and $37\frac{9}{7}$ Yards.

54. How much will 2 Bags of Wool come to, No. 1, wt. $94\frac{3}{8}$ Stone, No. 2, wt. $305\frac{7}{8}$ Stone, at 10s. $6\frac{2}{3}$ d. per Stone, but $4\frac{2}{3}$ Stone, of No. 2, are worth but $2\frac{1}{4}$ Stone of No. 1? *Ans.* 127l. 10s. $4\frac{52}{4}$ d.

PRACTICE

PRACTICE TABLE.

Parts of a *l.**s.* *d.*

10	:	0	is	$\frac{1}{2}$
6	:	8	--	$\frac{1}{3}$
5	:	0	--	$\frac{1}{4}$
4	:	0	--	$\frac{1}{5}$
3	:	4	--	$\frac{1}{6}$
2	:	6	--	$\frac{1}{8}$
2	:	0	--	$\frac{1}{10}$

Of a Shilling.

d.

6	is	$\frac{1}{2}$
4	--	$\frac{1}{3}$
3	--	$\frac{1}{4}$
2	--	$\frac{1}{6}$
$1\frac{1}{2}$	--	$\frac{1}{8}$
1	--	$\frac{1}{12}$

Parts of an *Ct.**lb.*

56	is	$\frac{1}{2}$
28	--	$\frac{1}{4}$
16	--	$\frac{1}{7}$
14	--	$\frac{1}{8}$
8	--	$\frac{1}{14}$
7	--	$\frac{1}{16}$
4	--	$\frac{1}{28}$

Of $\frac{1}{2}$ an *Ct.**lb.*

28	is	$\frac{1}{2}$
14	--	$\frac{1}{4}$
8	--	$\frac{1}{7}$
7	--	$\frac{1}{8}$

Of a $\frac{1}{4}$ *Ct.**lb.*

14	is	$\frac{1}{2}$
7	--	$\frac{1}{4}$
4	--	$\frac{1}{7}$
$3\frac{1}{2}$	--	$\frac{1}{8}$

C H A P. XVII.

P R A C T I C E.

S E C T. I.

1. IF 1 Hundred of Butter cost 25s. 6d. what will $\frac{1}{2}$ an Hundred come to? *Answ.* 12s. 9d.

L 2

Example.

Example.

$$\begin{array}{rcl}
 s. & d. & \\
 25 & : & 6 \\
 \frac{1}{2} & \hline
 12s. & 9d. &
 \end{array}$$

2. What will $\frac{1}{4}$ of a Ct. come to, at the Rate of 29s. 6d. per Ct. ? *Answ.* 7s. 4 $\frac{1}{2}$ d.

3. If 1 Yard of Cloth costs 8s. 6d. what will $\frac{1}{2}$ a Yard cost ? *Answ.* 4s. 3d.

4. How much will 14lb. of Sugar cost, at the Rate of 45s. 6d. per Ct. *Answ.* 5s. 8 $\frac{1}{4}$ d.

5. What will 7lb. be worth, if 1 Ct. cost 36s. 4d. ? *Answ.* 2s. 3 $\frac{1}{4}$ d.

6. How much is $\frac{1}{8}$ Part of 2000l. 11s. 8d. ? *Answ.* 250l. 1s. 5 $\frac{1}{2}$ d.

— II. —

7. If 1 Ct. of Madder cost 50s. what will $\frac{3}{4}$ Ct. be worth ? *Answ.* 11l. 17s. 6d.

Example.

$$\begin{array}{rcl}
 l. & s. & \\
 2 & : & 10\frac{3}{4} \\
 \hline
 2 \text{ gr. is } \frac{1}{2} & - & - & - & 1 : 5 : 0 \\
 1 \text{ gr. is } \frac{1}{2} & - & - & - & 0 : 12 : 6 \\
 \hline
 \text{£. } 1 & : & 17 : 6
 \end{array}$$

8. What

8. What will 2qrs. 14lb. come to, if 1 Ct. cost 50s. ? *Ans.* 1l. 11s. 3d.

9. If 1 Ct. cost 46s. 6d. what cost 1qr. 14lb. ? *Ans.* 17s. 5½d.

10. At 17l. 10s. 8d. the Tun, what will 3 Ct. 3qrs. cost ? *Ans.* 3l. 5s. 9d.

11. If 1lb. of Silk costs 3l. 10s. how much will 12 oz. cost ? *Ans.* 2l. 12s. 6d.

12. What will 3qrs. 21lb. of Tallow come to, at the Rate of 27s. 8d. per Ct. ? *Ans.* 1l. 5s. 11¼d.

— III. —

13. If 1lb. of Cloves cost 9s. 4d. what is ½ an Ounce worth ? *Ans.* 3½d.

Example.

$$\begin{array}{rcl} s. & d. & \\ 9 & : & 4 \\ \hline \end{array}$$

$$\frac{1}{2} \text{ oz. is } \frac{1}{32} \text{ lb. } 0 : 3\frac{1}{2} \text{ d.}$$

14. What will 3½lb. of Sugar come to, at the Rate of 14s. 4d. the ¼ of a Ct. ? *Ans.* 1s. 9½d.

15. If 1 Yard of Flanders Lace costs 15s. 4d. what costs 1 Nail ? *Ans.* 11½d.

16. How much will ¾ of an Ounce Avoirdupois come to, if 1lb. be worth 9s. 4d. ? *Ans.* 5¼d.

17. At 23s. 4d. per Ct. what is ½ of a lb. worth ? *Ans.* 1¼d.

18. At 18s. 8d. per Hundred, what comes $\frac{3}{4}$ of a lb. to? *Ans.* 1 $\frac{1}{2}$ d.

19. What will $\frac{1}{2}$ lb. cost, at the Rate of 9s. 4d. per Ct. *Ans.* $\frac{1}{2}$ d.

20. If an Ounce of Gold. be worth 4l. what is that a Grain? *Ans.* 2d.

— IV. —

21. At 4d. per lb. what will 112lb. come to? *Ans.* 1l. 17s. 4d.

Example.

$$\begin{array}{r}
 \text{lb.} \\
 112 \\
 d. \quad \text{---} \\
 4 \text{ is } \frac{1}{3} 3)7 : 4 \\
 \hline
 \text{£. } 1 : 17 : 4
 \end{array}$$

$$\begin{array}{r}
 \text{Or thus,} \\
 \text{lb.} \\
 112 \\
 d. \quad \text{---} \\
 4 \text{ is } \frac{1}{60} l. 1 : 17 : 4
 \end{array}$$

22. What will 379lb. of Sugar come to, at the Rate of 6d. per lb. *Ans.* 9l. 9s. 6d.

23. If 1 Yard costs 3d. what would 5014 Yards cost? *Ans.* 62l. 13s. 6d.

24. How much will 758 Yards come to, at 2d. the Yard? *Ans.* 6l. 6s. 4d.

25. How much will 112lb. come to, at 1 $\frac{1}{2}$ d. the lb.? *Ans.* 14s.

26. What will 976lb. come to, at 1d. per lb.? *Ans.* 4l. 1s. 4d.

— V. —

27. If 1 Pound of any Thing cost 5d. what will 1 Ct. be worth? *Ans.* 2l. 6s. 8d.

Example.

Example.

$$\begin{array}{r}
 \text{lb.} \\
 112 \\
 \hline
 \text{d.} \\
 4 \text{ is } \frac{1}{3} \text{ -- } 37 : 4 \\
 1 \text{ is } \frac{1}{4} \text{ -- } 9 : 4 \\
 \hline
 4 \mid 6 : 8 \\
 \text{£. } 2 : 6 : 8
 \end{array}$$

$$\begin{array}{r}
 \text{Or thus,} \\
 112 \\
 \hline
 \text{d.} \\
 5 \text{ is } \frac{1}{8} \text{ of a } l. \quad 2 : 6 : 8
 \end{array}$$

28. How much would 563 Yards cost, at 7d. the Yard? *Answ.* 16l. 8s. 5d.

29. How much will 112lb. come to, at 8d. the lb.? *Answ.* 3l. 14s. 8d.

30. If 1lb. costs 10d. how much would 795lb. cost? *Answ.* 33l. 2s. 6d.

31. At 11d. the Yard, how much cost 7576 Yards? *Answ.* 347l. 4s. 8d.

32. If 1 lb. of tann'd Leather costs 6½d. what cost 94 Hides, weight 1000lb.? *Answ.* 27l. 1s. 8d.

VI.

33. If 1 lb. of any Thing costs 1s. 3d. what will 9654lb. come to? *Answ.* 603l. 7s. 6d.

Example.

$$\begin{array}{r}
 \text{lb.} \\
 9654 \\
 \hline
 \text{d.} \\
 3 \text{ is } \frac{1}{4} \text{ -- } 2413 : 6 \\
 \hline
 120617 : 6 \\
 l. 603 : 7 : 6
 \end{array}$$

$$\begin{array}{r}
 \text{Or thus,} \\
 9654 \\
 \hline
 \text{d.} \\
 15 \text{ is } \frac{1}{16} \text{ of a } l. \quad 603 : 7 : 6
 \end{array}$$

34. At 4s. the Ell, how much cost 7839 Ells? *Answ.* 1567l. 16s.

35. If

35. If 1 lb. of any Thing costs 2s. 6d. what will 7753 lb. cost? *Ans.* 969l. 2s. 6d.

36. What will 9654 Yards come to, at 3s. 4d. per Yard? *Ans.* 1609l.

37. How much will 500 Barrels of Barley come to, at the Rate of 6s. 8d. per Barrel? *Ans.* 166l. 13s. 4d.

— VII. —

38. If 1 Hundred of Merchandizes cost 7s. how much will 4563 Ct. come to? *Ans.* 1597l. 1s.

Example.

	Ct.	Or thus,
	4563	4563
s.	<u> </u>	<u> </u>
5 is $\frac{1}{4}$	1140 : 15	7
2 is $\frac{1}{16}$	456 : 6	<u> </u>
	<u> </u>	3194 11
	£. 1597 : 1	£. 1597 : 1

39. How much will 3215 Ells come to, at 6s. the Ell? *Ans.* 964l. 10s.

40. What will 7563 lb. cost, if 1 lb. costs 8s.? *Ans.* 3025l. 4s.

41. How much will 401 Ct. come to, at 13s. per Ct.? *Ans.* 260l. 13s.

42. If 1 Ct. costs 16s. how much will 269 Ct. come to? *Ans.* 215l. 4s.

43. What cost 2569 Ct. at 19s. per Ct.? *Ans.* 2250l. 11s.

— VIII. —

— VIII. —

44. If one Yard of Cloth costs 19s. 9d. what will 1400 Yards cost? *Ans.* 1382l. 10s.

Example.

$ \begin{array}{r} 1400 \\ 19 : 9d. \\ \hline 12600 \quad 3d. \text{ is } \frac{1}{30} \text{ of a } l. \quad 17 : 10 \text{ deduct.} \\ d. \quad 1400 \\ 6 \text{ is } \frac{3}{2} \text{ --- } 700 \\ 3 \text{ is } \frac{1}{2} \text{ --- } 350 \\ \hline 276510 \\ \hline \text{£. } 1382 : 10 \end{array} $	<i>Or thus,</i> $ \begin{array}{r} 1400 \\ \hline \text{£. } 1382 : 10 \end{array} $
--	---

45. How much will 4563lb. come to, at 4s. 9d. the lb. ? *Ans.* 1083lb. 14s. 3d.

46. How much will 112lb. cost, at 6s. 9d. the lb. ? *Ans.* 37l. 16s.

47. How much will 120Ct. cost, at 12s. 3d. per Ct. ? *Ans.* 73l. 10s.

48. If 1lb. of Mace costs 15s. 7d. what will 1Ct. cost? *Ans.* 87l. 5s. 4d.

— IX. —

49. If 1lb. of Silk costs 3l. 15s. what will 54 Ounces cost? *Ans.* 1l. 6s. 11 $\frac{1}{2}$ d.

Example.

$$\begin{array}{c} l. \quad s. \\ 3 : 15 \end{array}$$

$$\begin{array}{lcl} 4 \text{ oz. is } \frac{1}{4} & - & - & - & 0 : 18 : 9 \\ 1 & - & - & - & 0 : 04 : 8\frac{1}{2} \\ \frac{1}{2} & - & - & - & 0 : 02 : 4\frac{1}{8} \\ \frac{1}{4} & - & - & - & 0 : 01 : 2\frac{1}{16} \end{array}$$

$$£. 1 : 06 : 11\frac{7}{8} \text{ or } \frac{1}{2}d. \\ \text{(near enough for Use.)}$$

Note. In these, and the like Cases, Merchants take no Notice of such small Parts of a Penny as $\frac{1}{8}$ or $\frac{1}{16}$, nor is it fit for Use. Therefore, to be short, and to avoid unnecessary Work, one may, wherever the Fraction is less than $\frac{1}{4}d.$ put nothing; and if less than an $\frac{1}{2}d.$ put a $\frac{1}{4}d.$ and if less than $\frac{3}{4}d.$ put an $\frac{1}{2}d.$ and if less than $1d.$ put $\frac{3}{4}d.$ not that I give this to the Learner as a Precedent for the Questions here proposed; but that when he comes into Business he shall not be tedious to himself or his Master. However the Perfectness of the Art which I aim at to instruct Youth in, requires that every Question should be resolved without the least Fault.

50. What will $7\frac{7}{8}$ oz. of Spice come to, if 12s. 8d. are paid for 1lb.? *Ans.* 6s. $2\frac{1}{8}d.$

51. How much would 21l. of Sugar cost, at the Rate of 54s. 4d. the Ct.? *Ans.* 10s. $2\frac{1}{4}d.$

52. If 1 Ct. of Madder cost 47s. 6d. what will $7\frac{1}{2}lb.$ come to? *Ans.* 3s. $2\frac{1}{2}d.$

53. What will $14\frac{3}{4}lb.$ come to, if 1 Ct. cost 27l. 10s. 6d.? *Ans.* 3l. 12s. $5\frac{2}{3}d.$

54. How much will 11lb. and $\frac{1}{4}$ of any Thing come to, at 7s. 6d. the $\frac{1}{4}$ Ct.? *Ans.* 3s. $1\frac{3}{8}d.$

— X.

—X.—

55. What will $245\frac{1}{2}lb.$ of any Thing come to, at $3s. 6d.$ the Pound? *Ans.* $42l. 19s. 3d.$

Example.

$$\begin{array}{r}
 l. \\
 245\frac{1}{2} \\
 \underline{3s. 6d.} \\
 2s. 6d. \text{ is } \frac{1}{8} 30 : 12 : 6 \\
 1s. - - \text{ is } \frac{1}{20} 12 : 5 : 0 \\
 \frac{1}{2}lb. \text{ cost } - - 0 : 1 : 9 \\
 \hline
 \pounds. 42 : 19 : 3
 \end{array}$$

$$\begin{array}{r}
 \text{Or thus,} \\
 245\frac{1}{2} \\
 \underline{3s. 6d.} \\
 d. \quad 735 \\
 6 \text{ is } \frac{1}{2} 122 : 6 \\
 \frac{1}{2} lb. \text{ cost } 1 : 9 \\
 \hline
 8519 : 3 \\
 \hline
 \pounds. 42 : 19 : 3
 \end{array}$$

56. What cost $14Ct. 3qrs.$ of any Thing, at $16s. 4d.$ per Ct.? *Ans.* $12l. 0s. 11d.$

57. If $1Ct.$ costs $18s. 6\frac{1}{2}d.$ how much will $101Ct. 1qr.$ come to? *Ans.* $93l. 17s. 4\frac{1}{8}d.$

58. What will $193Ct. 3qrs.$ cost, at the Rate of $17s. 9\frac{1}{2}d.$ per Ct.? *Ans.* $172l. 7s. 1\frac{1}{2}d.$

59. What cost $203Ct. 3qrs.$ of any Thing, at $16s. 5\frac{1}{4}d.$ per Ct.? *Ans.* $167l. 9s. 1\frac{1}{8}d.$

60. What will $296\frac{1}{4}lb.$ of Indigo come to, at $5s. 6d.$ per lb.? *Ans.* $81l. 9s. 4\frac{1}{2}d.$

61. If 1 doz. of Candles cost $3s. 3d.$ what will a Box, qt. $5\frac{1}{2}$ dozen, come to? *Ans.* $17s. 10\frac{1}{2}d.$

—XI.—

62. If 1 hundred of Butter cost $18s. 9d.$ what will $106Ct. 3qrs. 14lb.$ come to? *Ans.* $100l. 3s. 10\frac{1}{2}d.$ *Ex-*

Example.

Ct. grs. lb.
 106 : 3 : 14
 18 : 9

848

106

6d. is $\frac{1}{2}s.$ - - - 53
 3d. is $\frac{1}{4}s.$ - - - 26 : 6
 2grs. is $\frac{1}{8}Ct.$ - - - 9 : $4\frac{1}{2}$
 1gr. is $\frac{1}{16}Ct.$ - - - 4 : $8\frac{1}{4}$
 14lb. is $\frac{1}{2}Ct.$ - - - 2 : $4\frac{1}{2}$

200|3 : 10 $\frac{7}{8}$ £. 100 : 3 : 10 $\frac{7}{8}$

63. What will 2061Ct. 2grs. 7lb. cost, at 16s. 6d. per Ct. ? *Ans.* 1700l. 15s. 9 $\frac{3}{4}$ d.

64. What will 106Ct. 3grs. 14lb. come to, at 9s. 4d. per Ct. ? *Ans.* 49l. 17s. 6d.

65. If 1 Ct. costs 15s. 9d. how much will 26Ct. 2grs. 7lb. come to ? *Ans.* 20l. 18s. 4 $\frac{5}{8}$ d.

66. If 1 Ct. costs 21s. 6d. how much will 306 Ct. 3grs. 21lb. come to ? *Ans.* 329l. 19s. 1 $\frac{7}{8}$ d.

67. If 1oz. of Silver costs 5s. 6d. how much will 10 lb. 6 pwt. 14 grs. cost ? *Ans.* 33l. 1s. 9 $\frac{3}{4}$ d.

— XII. —

68. What will 432Ct. 2grs. 22lb. come to, at the Rate of 18s. 6d. per Ct. ? *Ans.* 400l. 4s. 10 $\frac{1}{2}$ d.

Example.

Example.

Ct. qrs. lb.
432 : 2 : 22
18s. 6d.

3456
432
6d. is $\frac{1}{2}$ s. - - 216
2qrs. is $\frac{1}{2}$ Ct. - - 9 : 3
14lb. is $\frac{1}{4}$ - - - 2 : 3 $\frac{3}{4}$
7lb. is $\frac{1}{2}$ - - - 1 : 1 $\frac{7}{8}$
1lb. is $\frac{1}{7}$ - - - 0 : 1 $\frac{5}{56}$

80014 : 10 $\frac{17}{28}$

£. 400 : 4 : 10 $\frac{17}{28}$

69. What will 951Ct. 2qrs. 27lb. cost, at 11s. 3d. per Ct. ? *Answ.* 535l. 7s. 11 $\frac{5}{12}$ d.

70. What will 506Ct. 1qr. 11lb. come to, at 13s. 7d. per Ct. ? *Answ.* 343l. 17s. 10 $\frac{85}{112}$ d.

71. What will 499Ct. 3qrs. 25lb. cost, at 25s. 11d. per Ct. ? *Answ.* 647l. 17s. 7 $\frac{75}{112}$ d.

72. At 19s. 9d. per Ct. how much will 109Ct. 0qrs. 15lb. come to ? *Answ.* 107l. 15s. 4 $\frac{83}{112}$ d.

73. If 1Ct. cost 15s. 2d. what will 753Ct. 1qr. 25lb. come to ? *Answ.* 571l. 7s. 8 $\frac{1}{8}$ d.

74. If 1lb. of Silk cost 3l. 6s. 5d. what will 80lb. 10 Ounces cost ? *Answ.* 267l. 14s. 10 $\frac{1}{8}$ d.

75. How much will 1095Ct. 0qrs. 5lb. come to, at the Rate of 17s. 6d. per Ct. ? *Answ.* 958l. 3s. 3 $\frac{1}{2}$ d.

76. What will 231Ct. 0qrs. 1lb. come to, if 1Ct. cost 18s. 3d. ? *Answ.* 210l. 15s. 10 $\frac{107}{112}$ d.

M

77. If

77. If 1 lb. of Silver cost 3*l.* 4*s.* what will 100 lb. 11oz. come to? *Answ.* 322*l.* 18*s.* 8*d.*

78. If 1 Tun of Butter cost 19*l.* 19*s.* 6*d.* how much will 20 Tuns 19*Ct.* 3*qrs.* 14*lb.* come to? *Answ.* 419*l.* 7*s.* 08³₈*d.*

79. What will 10 Tuns, 17*Ct.* 3*qrs.* 14*lb.* come to, at 25*l.* 10*s.* 9*d.* the Tun? *Answ.* 278*l.* 0*s.* 98³₈*d.*

80. What will 7 Yards, 3*qrs.* and $\frac{1}{2}$ *qr.* come to, at 6*s.* 9*d.* the Yard? *Answ.* 2*l.* 13*s.* 17¹₈*d.*

81. If 1 Tun costs 21*l.* 15*s.* 6*d.* what cost 25 Tuns, 15*Ct.* 3*qrs.* 14 $\frac{1}{2}$ *lb.*? *Answ.* 561*l.* 13*s.* 32⁸₁ $\frac{1}{4}$ *d.*

82. What will 15 Yards $1\frac{1}{2}$ Quarter of Cloth cost, if 1 Piece, containing 42 Yards, costs 38*l.* 17*s.* 6 $\frac{1}{2}$ *d.*? *Answ.* 14*l.* 4*s.* 7 $\frac{1}{2}$ $\frac{1}{4}$ *d.*

83. If 1 *Ct.* costs 19*s.* 11 $\frac{3}{4}$ *d.* what will 11*Ct.* 3*qrs.* 27 $\frac{1}{2}$ *lb.* come to? *Answ.* 11*l.* 19*s.* 7 $\frac{1}{2}$ $\frac{1}{8}$ *d.*

84. What will 19 Tuns, 19*Ct.* 3*qrs.* 27 $\frac{1}{2}$ *lb.* come to, at 19*l.* 19*s.* 11 $\frac{3}{4}$ *d.* the Tun? *Answ.* 399*l.* 19*s.* 51⁶₇ $\frac{41}{80}$ *d.*



C H A P. XVIII.

TRET and TARE.

According to the Custom of the City of Cork, the Merchants allow 1 per *Ct.* that is, 1*lb.* cut of every 112*lb.* to be deducted from the Gross Weight of all Sorts of Merchandizes, except for Wool, Beef, Butter and Hides; and this they call Tret.

For Wool they deduct 8*lb.* for every 20 Stone, after the Tare is deducted.

For

Tret and Tare.

135

For Butter they allow 2lb. at the Beam for every large Cask.

For raw Hides 4lb. per Piece.

For Beef 8lb. per Carcass.

N. B. TARE is the Weight of Casks, Bag, or whatever else the Goods are put in, the Weight whereof is often marked or branded on the outside of it.

S E C T. I.

1. Bought 100 Carcasses of Beef, wt. gross 450 Ct. 2 qrs. 23 lb. Tret 8 lb. per Carcass, and at 8s. 6d. per Ct. what is the neat wt. and what does it amount to? *Ans.* 188 l. 10 s. 3 d.

Example.

	Ct.	qrs.	lb.	
Gross - - - -	450	2	23	100 Carcasses
Tret - - - -	7	0	16	8
Neat - - - -	443	2	7	16 { Ct. qrs. lb.
at 8s. 6d. per Ct.				800 { 7 : 0 : 16
				212 {
	3544			
6d. is $\frac{1}{2}$ - - - -	221	6		
2 qrs. is $\frac{1}{2}$ - - - -	4	3		
7 lb. is $\frac{1}{8}$ - - - -	0	6	$\frac{3}{8}$	
	37710	3	$\frac{3}{8}$	

Ans. £ 188 : 10 : 3 d

2. What will 400 raw Hides come to, wt. gross 306 Ct. 3 qrs. 15 lb. Tret 4 lb. per Hide, and at 19s. 10d. per Ct. ? *Ans.* 290 l. 3 s. 2 d.

M 2

3. If

3. If 1 Ct. of Butter costs 21s. 6d. what will 250 Firkins cost, wt. gross 127Ct. 2qrs. 21lb. Tare, 11lb. per Firkin? *Ans.* 110l. 17s. 4 $\frac{3}{8}$ d.

4. Sold 10 Casks of Merchandizes, wt. gross, 33 Ct. 2qrs. 15lb. Tare, 15lb. per Cask, and at 23s. 4d. per Ct. what does it come to? *Ans.* 37l. 13s. 6 $\frac{1}{2}$ d.

5. Bought 150 large Casks of Butter, weight gross, 206Ct. 3qrs. 24lb. Tare 30lb. per Cask, and at 24s. 6d. per Ct. I demand what it comes to? *Ans.* 204lb. 6s. 3d.

———— II. ————

6. Two Hhds. of Tallow weigh as follow, Tret, 1 per Ct. out of the gross, and at 30s. per Ct. what do they come to? *Ans.* 29l. 5s. 1 $\frac{1}{8}$ d.

Example.

	Ct.	qr.	lb.		Ct.	qrs.	lb.
No. 1, wt.	10	: 1	: 11	Tare	0	: 3	: 20
No. 2, wt.	11	: 0	: 17	-----	0	: 3	: 14
gross,	21	: 2	: 00				1 : 3 : 6
1 per Ct. Tret,	0	: 0	: 21 $\frac{1}{2}$				
	21	: 1	: 6 $\frac{1}{2}$				
Tare,	1	: 3	: 6				
Neat,	19	: 2	: 0 $\frac{1}{2}$				
at 30s. per Ct.							

570
2qrs. is $\frac{1}{2}$ 15
 $\frac{1}{2}$ lb. is 1 $\frac{1}{2}$ 0 : 1 $\frac{1}{2}$ 8

5815 : 1 $\frac{1}{2}$ 8

Ans. £. 29 : 5 : 1 $\frac{1}{8}$

7. Sold 4 Hhds. of Sugar, weighing as follow :
 No. 1, wt. 7 Ct. 3 qrs. 16 lb. Tare, 3 qrs. 20 lb.
 No. 2, 8 Ct. 0 qrs. 10 lb. Tare, 3 qrs. 24 lb. No. 3,
 7 Ct. 2 qrs. 26 lb. Tare, 3 qrs. 27 lb. No. 4, 8 Ct.
 2 qrs. 18 lb. Tare, 3 qrs. 25 lb. Tret, 1 per Ct. and
 at 35s. 4d. per Ct. how much do they amount to?
Answ. 49l. 17s. 5 $\frac{1}{2}$ d.

8. A Merchant has bought 4 Hhds. of Copperas,
 Weight as follow, viz. No. 1, 10 Ct. 2 qrs. 4 lb.
 Tare, 3 qrs. 4 lb. No. 2, 11 Ct. 0 qrs. 10 lb. Tare,
 3 qrs. 10 lb. No. 3, 12 Ct. 1 qr. 0 lb. Tare, 3 qrs. 14 lb.
 No. 4, 11 Ct. 2 qrs. 14 lb. Tare, 3 qrs. 18 lb. Tret, 1
 per Ct. and at 8s. 6d. per Ct. how much do they
 come to? *Answ.* 17l. 14s. 3 $\frac{1}{2}$ d.

9. Four Casks of Raisins, weight as follows, No.
 1, 1 Ct. 3 qrs. 25 lb. Tare, 0 qrs. 21 lb. No. 2, 1 Ct.
 3 qrs. 20 lb. Tare, 0 qrs. 24 lb. No. 3, 2 Ct. 1 qr.
 16 lb. Tare, 0 Ct. 1 qr. 3 lb. No. 4, 1 Ct. 3 qrs. 23 lb.
 Tare, 0 Ct. 0 qrs. 25 lb. Tret, 1 per Ct. and at
 30 $\frac{1}{2}$ s. per Ct. what do they amount to? *Answ.* 11l.
 0s. 7 $\frac{1}{8}$ d.

10. What will 3 Bales of Coffee come to, No. 1,
 wt. 2 Ct. 3 qrs. 12 lb. Tare, 16 lb. No. 2, 3 Ct. 1 qr.
 20 lb. Tare, 19 lb. No. 3, 3 Ct. 1 qr. 24 lb. Tare,
 18 lb. Tret, 1l. per Ct. and at 18l. 10s. per Ct.?
Answ. 170l. 0s. 2 $\frac{3}{8}$ d.

— III. —

11. What will 2 Bags of Merchandizes come
 to, No. 1, wt. 2 Ct. 3 qrs. 10 lb. No. 2, 3 Ct. 2 qrs.
 18 lb. Tret, 1 per Ct. Tare, 16 lb. per Bag, and
 at 1s. 8d. per lb.? *Answ.* 57l. 9s. 2d.

Example.

	Ct.	qrs.	lb.	lb.
No. 1,	2	3	10	Tare, 16
2,	3	2	18	16
	6	2	00	32 is 1 qr. &
Tret,	0	0	6 $\frac{1}{2}$	(4 lb.
	6	1	21 $\frac{1}{2}$	
Tare,	0	1	4	
Neat,	6	0	17 $\frac{1}{2}$	

112

689 $\frac{1}{2}$ at 1s. 8d. per lb.6d. is $\frac{1}{2}$ 344 : 62d. is $\frac{1}{3}$ 114 : 10 $\frac{1}{2}$ lb. cost 0 : 10

11419 : 2

£. 57 : 9 : 2

12. A Merchant has sold 3 Bags of Pepper, viz. No. 1, weighing 3 Ct. 2 qrs. 0 lb. No. 2, 4 Ct. 1 qr. 7 lb. No. 3, 3 Ct. 3 qrs. 21 lb. Tret 1 per Ct. and Tare 40 lb. for each Bag, and at 14 $\frac{1}{2}$ d. per lb. neat, I demand how much it will come to?
Ans. 72l. 15s. 7 $\frac{1}{2}$ d.

13. Sold 4 Casks of Indigo, wt. gross 18 Ct. 2 qrs. 0 lb. Tret, 1 per Ct. Tare, 37 lb. per Cask, and at 4s. 6d. per lb. what do they amount to?
Ans. 428l. 14s. 9d.

14. Twelve Casks of Merchandizes, wt. 306Ct. 3qrs. 0lb. Tret, 1 per Ct. Tare, 35lb. per Cask, and at $15\frac{1}{2}d.$ per lb. what do they amount to? *Ans.* 2171l. 17s. $9\frac{1}{8}d.$

15. Three Bags of Cocoa, wt. gross, 10Ct. 1qr. 14lb. Tret, 1 per Ct. Tare 7lb. per Bag, and at $9\frac{1}{4}d.$ per lb. what do they come to? *Ans.* 45l. 18s. $7\frac{1}{3}\frac{2}{5}d.$

16. What will 4 Hhds. of Tallow come to, No. 1, wt. 9Ct. 3qrs. 24lb. No. 2, wt. 10Ct. 2qrs. 16lb. No. 3, wt. 11Ct. 0qrs. 12lb. No. 4, wt. 9Ct. 3qrs. 4lb. Tret, 1 per Ct. and Tare, 3qrs. 6lb. per Hhd. and at 20l. 10s. per Tun? *Ans.* 38l. 17s. $31\frac{1}{2}d.$

— IV. —

17. Bought 3 Packs of Wool, wt. viz. No. 1, 3Ct. 1qr. 12lb. No. 2, 3Ct. 3qrs. 7lb. No. 3, 3Ct. 2qrs. 15lb. Tare, 30lb. per Pack, and Tret 8lb. per every 20 Stone, and at 10s. 6d. per Stone, what do they come to? *Ans.* 35l. 16s. $7\frac{1}{2}d.$

Example

Example.

	Ct.	qrs.	lb.	lb.
No: 1 - - -	3	: 1	: 12	Tare, 30
2 - - -	3	: 3	: 7	- - - 30
3 - - -	3	: 2	: 15	- - - 30
	10	: 3	: 6	90 are 3 qrs. 6 lb.
Tare,	0	: 3	: 6	
	10	: 0	: 0	
	7			

Stone, lb.

If 20 - 8 - - 70 comes 28 lb. is 1 Stone 12 lb.

Tret, 1 : 12

68 : 4
 at 10s. 6d. per Stone,

6806d. is $\frac{1}{2}$ - - - 344lb. is $\frac{1}{4}$ - - - 2 : 7 $\frac{1}{2}$ 716 : 7 $\frac{1}{2}$ Answ. £. 35 : 16 : 7 $\frac{1}{2}$

18. Sold 4 Packs of Wool, at 9s. 9d. per Stone, weighing, viz. No. 1, 3 Ct. 3 qrs. 27 lb. No. 2, 3 Ct. 2 qrs. 16 lb. No. 3, 4 Ct. 1 qr. 10 lb. No. 4, 4 Ct. 0 qrs. 6 lb. Tare, 30 lb. per Pack, and Tret, 8 lb. for every 20 Stone. I demand what they come to? Answ. 49l. 15s. 2 $\frac{1}{2}$ d.

19. Bought

19. Bought 5 Packs of Wool, weight, viz. No. 1, 4Ct. 2qrs. 15lb. No. 2, 4Ct. 2qrs. 0lb. No. 3, 3Ct. 3qrs. 21lb. No. 4, 3Ct. 3qrs. 14lb. No. 5, 4Ct. 0qrs. 14lb. Tare, 28lb. per Pack, Tret, 8lb. per every 20 Stone, and at 11s. 6d. per Stone, how much do they come to? *Answ.* 77l. 15s. 8½d.

20. Sold 3 Packs of Wool, weight as followeth: No. 1, 3Ct. 1qr. 27lb. No. 2, 3Ct. 2qrs. 16lb. No. 3, 4Ct. 0qrs. 21lb. Tare, 29lb. per Pack, Tret, 8lb. for every 20 Stone, and at 11s. 7d. per Stone, what do they come to? *Answ.* 41l. 13s. 7¾d.

— V. —

Of Tares and Allowances per Hundred wt.

21. Fifty Casks of Butter, weight gross 202Ct. 3qrs. 14lb. Tare, 20 per Ct. (that is 20lb. out of every 112lb.) what is the neat Weight? *Answ.* 166Ct. 2qrs. 16½lb.

Example.

Ct.	qrs.	lb.	Ct.	qrs.	lb.
202	3	14	Gross, 202	3	14
20			Tare, 36	0	25½
		4040	Neat, 166	2	16½
2 qrs.	is ½	10			
1 qr.	is ½	- 5			
14 lb.	is ½	- 2½			
		4087½	Ct.	qrs.	lb.
		2222	36	0	25½
		22			

22. Ten Hhds. of Tallow, wt. gross 104Ct. 2 qrs. 25lb. Tare, 14 per Ct. what are they neat? *Answ.* 91Ct. 2qrs. 14 $\frac{7}{8}$ lb.

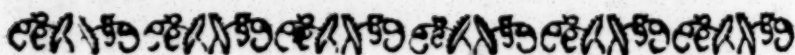
23. Six Butts of Currants, wt. gross 58Ct. 1qr. 18lb. Tare, 16 per Ct. what are they neat? *Answ.* 50Ct. 0qrs. 7 $\frac{3}{8}$ lb.

24. Four Hhds. of Sugar, wt. 43Ct. 3qrs. 21lb. Tare, 12 per Ct. what are they neat? *Answ.* 39Ct. 0qrs. 25 $\frac{1}{2}$ lb.

25. Three Chests of Sugar, weight gross 38Ct. 3qrs. 24lb. Tare, 18lb. per Ct. what are they neat? *Answ.* 32Ct. 2qrs. 22 $\frac{2}{3}$ lb.

26. Five Hhds. of Madder, wt. gross, 36Ct. 1qr. 19lb. Tare, 14 per Ct. what are they neat? *Answ.* 31Ct. 3qrs. 13 $\frac{1}{8}$ lb.

27. Eight Bags of Pepper, wt. 21Ct. 3qrs. 13lb. Tare, 4 per Ct. what are they neat? *Answ.* 21Ct. 0qrs. 9 $\frac{1}{2}$ $\frac{5}{8}$ lb.



CHAP. XIX.

EXCHANGE.

SECT. I.

To reduce ENGLISH Money into IRISH.

A Merchant in Ireland, draws a Bill of Exchange for 150*l.* English Money, which he negotiates to a Banker, at 5 per Ct. advance, how much Irish Money is he to receive? *Answ.* 157*l.* 10*s.*

Example.

Example.

$$\begin{array}{r} \text{£. } 150 \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{£. } 150 : 0 : \text{Englsh.} \\ 7 : 10 : \text{Exchange.} \\ \hline \end{array}$$

$$\begin{array}{r} 7150 \\ 20 \\ \hline \end{array}$$

$$\text{£. } 157 : 10 : \text{Irish.}$$

$$\hline 10100$$

270*l.* *Englsh.*, at 7 per Ct. how much *Irish*?
Answ. 288*l.* 18*s.*

370*l.* *Englsh.*, at 9 per Ct. how much *Irish*?
Answ. 403*l.* 6*s.*

510*l.* at 8 per Ct. what will it come to? *Answ.*
 550*l.* 16*s.*

955*l.* at 6 per Ct. what is it? *Answ.* 9012*l.* 6*s.*

265*l.* at 4 per Ct. how much is it? *Answ.* 275*l.* 12*s.*

— II. —

190*l.* 17*s.* 10*d.* *Englsh* Money, at 5 per Ct.
 how much *Irish* is it? *Answ.* 200*l.* 8*s.* 8⁷/₁₀*d.*

Example.

$$\begin{array}{r} \text{l. } \quad \text{s. } \quad \text{d.} \\ 190 : 17 : 10 \\ \hline \quad \quad 5 \end{array}$$

$$\begin{array}{r} \text{£. } 190 : 17 : 10 \text{ Englsh.} \\ 9 : 10 : 10\frac{7}{10} \text{ Exchange.} \\ \hline \end{array}$$

$$\begin{array}{r} \text{£. } 9154 : 9 : 2 \\ \hline \quad 20 \end{array}$$

$$200 : 8 : 8\frac{7}{10} \text{ Irish.}$$

$$\hline \text{s. } 10189$$

$$\hline 112$$

$$\begin{array}{r} \text{d. } 1070 \overline{) 7} \\ 1 \overline{) } \\ \hline 10 \end{array}$$

$$\hline 200$$

$$750\text{l.}$$

750*l.* 18*s.* 8*d.* at 7 per Ct. how much is it?
*Ans*w. 803*l.* 9*s.* 11 $\frac{17}{3}$ *d.*

901*l.* 1*s.* 11*d.* at 8 per Ct. ? *Ans*w. 973*l.* 3*s.* 8 $\frac{1}{3}$ *d.*

300*l.* 15*s.* 6*d.* at 9 per Ct. ? *Ans*w. 327*l.* 16*s.* 10 $\frac{37}{8}$ *d.*

199*l.* 19*s.* 11*d.* at 11 per Ct. ? *Ans*w. 221*l.* 19*s.* 10 $\frac{89}{16}$ *d.*

999*l.* 19*s.* 9*d.* at 3 per Ct. ? *Ans*w. 1029*l.* 19*s.* 8 $\frac{1}{8}$ *d.*

— III. —

280*l.* *English* at 6 $\frac{1}{2}$ per Ct. advance, how much
Irish is it ? *Ans*w. 298*l.* 4*s.* 0*d.*

Example.

	<i>l.</i>	<i>s.</i>	<i>d.</i>	
£. 280	280	0	0	<i>English.</i>
6 $\frac{1}{2}$	18	4	0	<i>Exchange.</i>
1680	298	4	0	<i>Irish.</i>
140				
£. 18120				
20				
<i>s.</i> 4100				

506*l.* at 5 $\frac{1}{2}$ per Ct. ? *Ans*w. 533*l.* 16*s.* 7 $\frac{1}{2}$ *d.*

709*l.* at 7 $\frac{1}{2}$ per Ct. ? *Ans*w. 763*l.* 18*s.* 11 $\frac{2}{3}$ *d.*

956*l.* at 9 $\frac{1}{8}$ per Ct. ? *Ans*w. 1043*l.* 4*s.* 8 $\frac{2}{3}$ *d.*

1015*l.* at 7 $\frac{1}{2}$ per Ct. ? *Ans*w. 1093*l.* 13*s.* 3*d.*

250*l.* at 3 $\frac{7}{8}$ per Ct. ? *Ans*w. 259*l.* 13*s.* 9*d.*

763*l.* at $6\frac{1}{4}$ per Ct. ? Answ. 810*l.* 13*s.* 9*d.*

—IV.—

309*l.* 15*s.* 4*d.* English, at $4\frac{1}{4}$ per Ct. advance, how much Irish is it ? Answ. 322*l.* 18*s.* $7\frac{3}{8}$ *d.*

Example.

<i>l.</i> <i>s.</i> <i>d.</i> 309 : 15 : 4 $4\frac{1}{4}$ 1239 : 1 : 4 77 : 8 : 10 £. 13 16 : 10 : 2 20 <i>s.</i> 3 30 12 <i>d.</i> 3 62 31 —equal— 100 50.	<i>l.</i> <i>s.</i> <i>d.</i> 309 : 15 : 4 English, 13 : 3 : $3\frac{3}{8}$ Exchange, £. 322 : 18 : $7\frac{3}{8}$ Irish.
--	---

£. 103 : 0 : 11, at $5\frac{1}{3}$ per Ct. ? Answ. 108*l.*
10*s.* $9\frac{29}{80}$ *d.*

£. 905 : 17 : 7, at $5\frac{1}{4}$ per Ct. ? Answ. 953*l.*
8*s.* $9\frac{31}{80}$ *d.*

£. 300 : 15 : 0, at $7\frac{1}{2}$ per Ct. ? Answ. 323*l.*
6*s.* $1\frac{1}{2}$ *d.*

£. 3014 : 16 : 0, at $3\frac{1}{8}$ per Ct. ? Answ. 3109*l.*
0*s.* 3*d.*

£. 460 : 19 : 9, at $5\frac{3}{4}$ per Ct. ? Answ. 487*l.*
9*s.* $10\frac{23}{80}$ *d.*

750*l.* 18*s.* 8*d.* at 7 per Ct. how much is it?
Answ. 803*l.* 9*s.* 11 $\frac{1}{2}$ *d.*

901*l.* 1*s.* 11*d.* at 8 per Ct. ? *Answ.* 973*l.* 3*s.* 8 $\frac{1}{3}$ *d.*

300*l.* 15*s.* 6*d.* at 9 per Ct. ? *Answ.* 327*l.* 16*s.* 10 $\frac{3}{8}$ *d.*

199*l.* 19*s.* 11*d.* at 11 per Ct. ? *Answ.* 221*l.* 19*s.* 10 $\frac{8}{16}$ *d.*

999*l.* 19*s.* 9*d.* at 3 per Ct. ? *Answ.* 1029*l.* 19*s.* 8 $\frac{1}{16}$ *d.*

— III. —

280*l.* *Englsh* at 6 $\frac{1}{2}$ per Ct. advance, how much
Irisb is it ? *Answ.* 298*l.* 4*s.* od.

Example.

	<i>l.</i>	<i>s.</i>	<i>d.</i>	
£. 280	280	0	0	<i>Englsh.</i>
6 $\frac{1}{2}$	18	4	0	<i>Exchange.</i>
1680	298	4	0	<i>Irisb.</i>
140				
£. 18120				
20				
<i>s.</i> 4100				

506*l.* at 5 $\frac{1}{2}$ per Ct. ? *Answ.* 533*l.* 16*s.* 7 $\frac{1}{3}$ *d.*

709*l.* at 7 $\frac{1}{4}$ per Ct. ? *Answ.* 763*l.* 18*s.* 11 $\frac{2}{3}$ *d.*

956*l.* at 9 $\frac{1}{8}$ per Ct. ? *Answ.* 1043*l.* 4*s.* 8 $\frac{3}{4}$ *d.*

1015*l.* at 7 $\frac{1}{4}$ per Ct. ? *Answ.* 1093*l.* 13*s.* 3*d.*

250*l.* at 3 $\frac{1}{4}$ per Ct. ? *Answ.* 259*l.* 13*s.* 9*d.*

763*l.* at $6\frac{1}{4}$ per Ct. ? *Ans.* 810*l.* 13*s.* 9*d.*

— IV. —

309*l.* 15*s.* 4*d.* *English*, at $4\frac{1}{4}$ per Ct. advance, how much *Irish* is it ? *Ans.* 322*l.* 18*s.* $7\frac{3}{5}$ *d.*

Example.

<i>l.</i> <i>s.</i> <i>d.</i> 309 : 15 : 4 1239 : 1 : 4 77 : 8 : 10 £. 13 16 : 10 : 2 20 <i>s.</i> 3 30 12 <i>d.</i> 3 62 31 equal 100 50	<i>l.</i> <i>s.</i> <i>d.</i> 309 : 15 : 4 <i>English</i>, 13 : 3 : $3\frac{3}{5}$ Exchange, £. 322 : 18 : $7\frac{3}{5}$ <i>Irish</i>.
--	---

£. 103 : 0 : 11, at $5\frac{1}{3}$ per Ct. ? *Ans.* 108*l.*
10*s.* $9\frac{29}{30}$ *d.*

£. 905 : 17 : 7, at $5\frac{1}{4}$ per Ct. ? *Ans.* 953*l.*
8*s.* $9\frac{31}{40}$ *d.*

£. 300 : 15 : 0, at $7\frac{1}{2}$ per Ct. ? *Ans.* 323*l.*
6*s.* $1\frac{1}{2}$ *d.*

£. 3014 : 16 : 0, at $3\frac{1}{8}$ per Ct. ? *Ans.* 3109*l.*
0*s.* 3*d.*

£. 460 : 19 : 9, at $5\frac{3}{4}$ per Ct. ? *Ans.* 487*l.*
9*s.* $10\frac{23}{40}$ *d.*

£. 315 : 11 : 0, at $5\frac{3}{4}$ per Ct. ? Answ. 332l.
10s. $2\frac{11}{20}d.$

£. 999 : 19 : 0, at $3\frac{7}{8}$ per Ct. ? Answ. 1038l.
13s. $11\frac{1}{20}d.$

£. 680 : 15 : 5, at $7\frac{1}{2}$ per Ct. ? Answ. 733l.
13s. $7\frac{8}{100}d.$

— V. —

£. 100 : 10 : $6\frac{1}{2}$, English Money, at $6\frac{1}{2}$ per Ct. advance, how much Irish Money is it ? Answ. 107l. 01s. $2\frac{8}{100}d.$

Example.

l. s. d.
100 : 10 : $6\frac{1}{2}$
 $6\frac{1}{2}$

l. s. d.
100 : 10 : $6\frac{1}{2}$
 $6 : 10 : 8\frac{8}{100}$

603 : 3 : 3
50 : 5 : $3\frac{1}{4}$

Answ. 107 : 01 : $2\frac{8}{100}$

£. 6153 : 8 : $6\frac{1}{4}$
20

s. 10168
12

d. 8122 $\frac{1}{4}$

89 — 100
4 — 1
 $\frac{89}{400}$

£. 150 : 18 : $6\frac{1}{4}$ at $5\frac{1}{2}$ per Ct. ? Answ. 159l.
4s. $7\frac{1}{100}d.$ £. 380

Of Exchange.

147

£. 380 : 15 : 9½ at 7½ per Ct. ? Answ. 402l.
13s. 8½d.

£. 400 : 0 : 6¼ at 7½ per Ct. ? Answ. 428l.
10s. 6½d.

£. 519 : 19 : 11¼ at 6¾ per Ct. ? Answ. 555l.
1s. 11½d.

£. 100 : 10 : 6¼ at 5½ per Ct. ? Answ. 105l.
13s. 6½d.

VI.

To reduce Irish Money into English.

A Merchant in London has a Bill of Exchange for 100l. Irish Money, which he sells or negotiates at 5 per Cent. that is, 105l. in Ireland, is worth 100l. in England. I demand how much English Money he is to receive ? Answ. 95l. 4s. 9½d.

Example.

Irish	English	Irish
105	100	100
	20	
	2000	
	12	
	24000	
	100	
	2400000	

967(1
 3000(5
 2400000
 2000000
 200000
 20000
 2000
 200

20(9
 22887
 22222
 222

19014
 15
 95:4:9½

N 2

£. 160

£. 160 : 10 : 0 *Irisb*, at 7 per Ct. how much *Englsh*? *Answ.* 150*l.*

£. 545 : 14 : 0 *Irisb*, at 7 per Ct. how much *Englsh*? *Answ.* 510*l.*

£. 1093 : 13 : 3 at $7\frac{3}{4}$ per Ct. ? *Answ.* 1015*l.*

£. 323 : 6 : $1\frac{1}{2}$ at $7\frac{1}{2}$ per Ct. ? *Answ.* 300*l.* 15*s.*

£. 62 : 2 : 0 at $3\frac{1}{2}$ per Ct. ? *Answ.* 60*l.*

£. 100 : 0 : 0 at $5\frac{1}{8}$ per Ct. ? *Answ.* 95*l.* 2*s.* $5\frac{8}{84}$ *d.*

£. 314 : 5 : 0 ^{at $4\frac{3}{4}$} ~~per~~ Ct. ? *Answ.* 300*l.*

£. 259 : 13 : 9 at $3\frac{1}{2}$ per Ct. ? *Answ.* 250*l.*

— VII. —

To reduce Sterling Money into Flemish.

A Merchant at Antwerp has a Bill of Exchange for 100*l.* payable in London, which he negotiates at 33*s.* 4*d.* Flemish, for 1*l.* Sterling, I demand how much Flemish Money he is to receive? *Answ.* 166*l.* 13*s.* 4*d.* Flemish.

Example.

<i>l.</i>	<i>s.</i>	<i>d.</i>
1	— 33 $\frac{1}{3}$	— 100
8	—	

100

100

222(1	{	33313
20000		166 : 13 : 4
3333		

Or thus.

1. 100

33 $\frac{1}{3}$

3300

33 $\frac{1}{3}$

33313 $\frac{1}{3}$

166 : 13 : 4

How

How many *l.* Flemish, are 279*l.* 8*s.* Sterling, at 33*s.* 4*d.* Flemish, per *l.* Sterling? *Answ.* 465*l.* 13*s.* 4*d.*

In 150*l.* 10*s.* Sterling, at 33*s.* 6*d.* Flemish, per *l.* Sterling, how many *l.* Flemish? *Answ.* 252*l.* 1*s.* 9*d.*

How many *l.* Flemish, are in 169*l.* 10*s.* 11*d.* Sterling, at 33*s.* 3*d.* Flemish, per *l.* Sterling? *Answ.* 281*l.* 17*s.* 4⁶³/₈₀*d.*

— VIII. —

To reduce Flemish Money into Sterling.

If 1*l.* Sterling is 33*s.* 4*d.* Flemish, how many *l.* Sterling are there in 166*l.* 13*s.* 4*d.* Flemish? *Answ.* 100*l.*

Example.

s.	d.	Sterl.	l.	s.	d.
33	: 4	— 1 —	166	: 13	: 4
12			20		
400			3333		
			12		
			d. 400000 { 100 <i>l.</i>		
			444000		

How many *l.* Sterling are equal to 465*l.* 13*s.* 4*d.* Flemish, at 33*s.* 4*d.* Flemish, per *l.* Sterling? *Answ.* 279*l.* 8*s.*

In 252*l.* 1*s.* 9*d.* Flemish, at 33*s.* 6*d.* how many *l.* Sterling? *Answ.* 150*l.* 10*s.*

How many *l.* Sterling are in 199*l.* 19*s.* 11*d.* Flemish, at 33³/₈*s.* per *l.* Sterling? *Answ.* 119*l.* 16*s.* 11³⁵⁷/₈₀*d.*

To reduce Guilders into Sterling Money.

How many *l.* Sterling are in 1000 Guilders, 10 Stivers, the Exchange at 33*s.* 4*d.* Flemish, for *l.* Sterling? *Ans.* 100*l.* 1*s.*

Example.

<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>Gil.</i>	<i>Stiv.</i>
33	4	1	1000	10
12			20	
400 Groot			20010	
			2	
			A00(20 { 100 and 20 over.	
			AAA00 { 20	
			A00 { 1 <i>s.</i>	
			A00 {	

NOTE, Each Gilder has 20 Stivers, and each Stiver 2 Groot or 16 Pennings, and each Shilling Flemish, 12 Groot.

How many *l.* Sterling are equal to 1680 Guilders, at 33*s.* 3*d.* Flemish per *l.* Sterling? *Ans.* 168*l.* 8*s.* 5²/₃*d.*

In 2080 Guilders, 15 Stivers, at 34*s.* 9*d.* Flemish per *l.* Sterling, how many *l.* Sterling? *Ans.* 199*l.* 11*s.* 10⁶/₁₁*d.*

At 33*s.* 11*d.* Flemish, per *l.* Sterling, I demand how many *l.* Sterling are in 6048 Guilders? *Ans.* 594*l.* 7*s.* 11²/₅*d.*

2048 Guilders, 15 Stivers, at 34*s.* 5*d.* Flemish per *l.* Sterling, how many *l.* Sterling? *Ans.* 198*l.* 8*s.* 6¹/₄*d.*

How

How many *l.* Sterling are in 10909 Guilders, 19 Stivers, at 34*s.* 7*d.* Flemish, per *l.* Sterling? *Ans.* 105*l.* 11*s.* 2½*d.*

In 1000 Guilders at 33½*s.* Flemish per *l.* Sterling, how many *l.* Sterling? *Ans.* 100*l.*

—X.—

To reduce Pounds Sterling into Guilders.

How many Guilders are equal to 100*l.* Sterling, at 33*s.* 4*d.* Flemish, per *l.* Sterling? *Ans.* 1000 Guilders.

NOTE, Each Gilder has 40 Groot.

<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>
1 —	33	: 4 —	100
	12		
	400		
	100		

~~400000~~ { 1000
~~40000~~

How many Guilders are in 1409*l.* Sterling, if one *l.* Sterling is 33*s.* 8*d.* Flemish? *Ans.* 14230 Guilders, 18 Stivers.

In 100*l.* 10*s.* Sterling, at 33*s.* 9*d.* Flemish, per *l.* Sterling, how many Guilders? *Ans.* 1017 Guilders, 11½ Stivers.

Tell me how many Guilders are in 1941*l.* 15*s.* 6*d.* Sterling, the Exchange at 33*s.* 11*d.* Flemish, per *l.* Sterling? *Ans.* 19757 Guilders, 11 Stivers, 32½ Pennings.

At 34*s.* 5*d.* Flemish, per *l.* Sterling, I would know how many Guilders are there in 1597*l.* 9*s.* 11*d.* Sterling? *Ans.* 16494 Guilders, 2 Stivers, 14½ Pennings.

—XI.

ella

— XI. —

To reduce French Crowns into Pounds Sterling.

A Merchant is remitted a Bill of Exchange, from Paris, upon London, or any other Town in England or Ireland, for 1800 Crowns, at $32\frac{1}{2}d.$ Sterling per Crown; how many *l.* Sterling, does it come to? *Answ.* 243*l.* 15*s.*

Example.

$$\begin{array}{r}
 1800 \\
 32\frac{1}{2} \\
 \hline
 3600 \\
 5400 \\
 900 \\
 \hline
 \begin{array}{l}
 2006 \\
 58800 \\
 22
 \end{array}
 \left\{
 \begin{array}{l}
 48715 \\
 \hline
 243 : 15s.
 \end{array}
 \right.
 \end{array}$$

How many *l.* Sterling, are equal to 1000 French Crowns, at $33\frac{1}{4}d.$ Sterling, per Crown? *Answ.* 138*l.* 10*s.* 10*d.*

In 1263 $\frac{1}{2}$ Crowns, at $32\frac{1}{2}d.$ Sterling, per Crown, how many *l.* Sterling? *Answ.* 171*l.* 1*s.* 11 $\frac{3}{4}d.$

How many *l.* Sterling, are equal to 1037 $\frac{3}{4}$ Crowns, at 33*d.* Sterling, for every Crown? *Answ.* 142*l.* 13*s.* 9 $\frac{3}{4}d.$

In 1976 Crowns, 1 Livre, 4 Sols, at $32\frac{1}{2}d.$ Sterling, per Crown, how many *l.* Sterling? *Answ.* 267*l.* 12*s.* 9*d.*

At $33\frac{3}{4}d.$ Sterling, per Crown, how many *l.* Sterling, are in 1000 Crowns? *Answ.* 140*l.* 12*s.* 6*d.*

How

How many *l* Sterling, are in 2822 Crowns, 2 Livres, 8 Sols, 4 Deniers, at 36*d.* Sterling, per Crown? *Ans.* 423*l.* 8*s.* 5*d.*

— XII. —

To reduce Pounds Sterling into French Crowns.

A Bill being drawn in London, or any Town of England or Ireland, upon Paris, or any other Part of France, for 243*l.* 15*s.* at 32½*d.* Sterling, per Crown; how many Crowns or Livres are to be paid for that Bill? *Ans.* 1800 Crowns, or 5400 Livres.

NOTE, A Crown is 3 Livres Tournois, a Livre is 20 Sols, and a Sol 12 Deniers.

<i>d.</i>	<i>Crown</i>	<i>l.</i>	<i>s.</i>
32½	— 1 —	243	: 15
		20	
65		4875	
		12	
		58500	
		2	
		82	
		217000	{
		68	
			1800 Crowns.
			3
			5400 Livres.

How many Crowns are equal to 138*l.* 10*s.* 10*d.* Sterling, at 33½*d.* per Crown? *Ans.* 1000 Crowns, or 3000 Livres.

In

In 171*l.* 1*s.* 11 $\frac{3}{4}$ *d.* Sterling, how many Crowns, at 32 $\frac{1}{2}$ *d.* Sterling, per Crown? *Answ.* 1263 $\frac{1}{2}$ Crowns, or 3790 Livres, 10 Sols.

How many Crowns are in 142*l.* 13*s.* 9 $\frac{1}{4}$ *d.* Sterling, at 33*d.* Sterling, per Crown? *Answ.* 1037 $\frac{3}{4}$ Crowns, or 3113 Livres, 5 Sols.

How many Crowns are there in 267*l.* 12*s.* 9*d.* Sterling, at 32 $\frac{1}{2}$ *d.* per Crown? *Answ.* 1976 Crowns, 1 Livre, 4 Sols.

In 140*l.* 12*s.* 6*d.* Sterling, how many Crowns at 33 $\frac{1}{4}$ *d.* Sterling per Crown? *Answ.* 1000 Crowns.

How many Crowns, 'Tournois, are equal to 423*l.* 8*s.* 5*d.* Sterling, Exchange, at 36*d.* Sterling per Crown? *Answ.* 2822 Crowns, 2 Livres, 8 Sols, 4 Deniers.

— XIII. —

To reduce Hamburg Money into Pounds Sterling.

A Bill being drawn at Hamburg, upon London, or any other Town in England or Ireland, for 3083 Mark, 12 $\frac{2}{3}$ Stivers Lubs, at 32*s.* 4*d.* gross for the *l.* Sterling, how much English Money will it come to? *Answ.* 254*l.* 6*s.* 8*d.*

Example.

Example.

s.	d.	l.	Marks,	Stiv.
32	4	1	3083	12 $\frac{2}{3}$
12	Gross in a Mark		32	2
388 Gros.			6166	25 $\frac{1}{3}$ Gros.
			9249	
			98656	
			add 25 $\frac{1}{3}$	
(1			98681 $\frac{1}{3}$	Gros.
(2				
(9				
98682 $\frac{1}{3}$			{ 254l. 6s. 8d.	
38888				
388				
8				

NOTE, The remaining 129 $\frac{1}{3}$ multiply by 20, and the Product divide again by 388, and there will come 6s. then there will remain 258 $\frac{2}{3}$, which multiply by 12, and divide the Product again by 388, and there will come 8d.

In 2443 Mark, 9 $\frac{1}{2}$ Stivers Lubs, how many l. Sterling, at 32s. 6d. Gross, per l. Sterling? *Answ.* 200l. 10s.

In 6763 Mark, 14 $\frac{3}{8}$ Stivers Lubs, at 32s. 9d. Gross, per l. Sterling, how many l. Sterling? *Answ.* 550l. 15s.

In 12093 Mark, 12 Stivers Lubs, at 32s. 3d. Gross, per l. Sterling, how many l. Sterling? *Answ.* 1000l.

How many l. Sterling, are in 4211 Mark 1 $\frac{3}{8}$ Stivers Lubs, at 32s. 6d. Gross, per l. Sterling? *Answ.* 345l. 10s. 6d.

— XVI. —

To reduce Pounds Sterling into Hamburg Money.

A Bill of $254\frac{1}{3}$ l. Sterling, being drawn at London, or any other Town in England or Ireland, upon Hamburg, at $32\frac{1}{3}$ Shill. Gros, per l. Sterling, how many Mark Lubs are to be paid for that Bill?
Answ. 3083 Mark $12\frac{2}{3}$ Stivers Eubs.

Example.

l.	s.	d.	l.
1	32	4	$254\frac{1}{3}$
			388
388			2032
			2032
			762
			$129\frac{1}{3}$

9868 $1\frac{1}{3}$ Gros.

2	{	3083 Mk. $12\frac{2}{3}$ Stiv. Lubs.
$212\frac{5}{8}$		
$9868\frac{1}{3}$		
32		

NOTE, The remaining $25\frac{1}{3}$ Gros, divide by 2, and they will be $12\frac{2}{3}$ Stivers.

How many Mark Lubs are equal to 200l. 10s. at $32\frac{1}{2}$ Shillings, Gros, per l. Sterling? *Answ.* 2443 Mk. $9\frac{1}{2}$ Stiv. Lubs.

How many Mark Lubs are in 550l. 15s. Ster. at 32s. 9d. Gros, per l. Ster.? *Answ.* 6763 Mk. $14\frac{3}{8}$ Stiv. Lubs.

In 1000l. Sterling, at 32s. 3d. gros, per l. Ster. how many Mark Lubs? *Answ.* 12093 Mk. 12 Stiv. Lubs.

In 345l. 10s. 6d. Ster. at 32s. 6d. gros, per l. Ster. how many Mark Lubs? *Answ.* 4211 Mk. $1\frac{3}{8}$ Stiv. Lubs.

— XV.

—XV.—

To reduce Portugal Money into Pounds Sterling.

A Merchant has a Bill of Exchange for 850 \$, 500 Res, payable in Lisbon, which Bill he negotiates or sells at 5s. 4d. per Milre. I demand how many l. Sterling he is to receive? *Answ.* 226l. 16s. od.

Example.

$$\begin{array}{r}
 850 \$ 500 \\
 5s. 4d. \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 d. \quad 4250 \\
 4 \text{ is } \frac{1}{3} \text{ ----- } 283 : 4 \\
 500 \text{ is } \frac{1}{2} \text{ ----- } 2 : 8 \\
 \hline
 453 | 6 : 0 \\
 \text{£. } 226 : 16 : 0
 \end{array}$$

How many l. Sterling, in 1000 \$, 000 Res, at 5s. 6d. per Milre? *Answ.* 275l.

In 2000 \$, 000 Res, at 5s. 8½d. per Milre, how many l.? *Answ.* 570l. 16s. 8d.

At 5s. 6¼d. per Milre, how many l. will 2060 \$, 380 Res make? *Answ.* 573l. os. 10²⁹²/₈₀₀d.

Tell me how many l. are in 1056 \$, 999 Res, at 5s. 4¼d. per Milre? *Answ.* 282l. 19s. 4⁷⁴³/₈₀₀d.

—XVI.—

To reduce Sterling Money into Portugal Money.

How many Milres are equal to 226l. 16s. the Exchange at 5s. 4d. per Milre? *Answ.* 850 \$, 500 Res.

○

Example.

<i>s.</i>	<i>d.</i>	<i>Example.</i>	<i>l.</i>	<i>s.</i>
		Res	226	16
5	:	1000	20	
12				
			4536	
64			12	

54432
1000

$\left. \begin{array}{l} 328 \\ 8AA32000 \\ 6AAAAAA \\ 66666 \end{array} \right\} 850 \text{ } \mathcal{L} \text{ } 500 \text{ Res}$

In 275*l.* at 5*s.* 6*d.* per Milre, how many Milres?
Ans. 1000 $\mathcal{L}$, 000 Res.

How many Milres are in 570*l.* 16*s.* 8*d.* the
Exchange at 5*s.* 8½*d.* per Milre? *Ans.* 2000 $\mathcal{L}$,
000 Res.

At 5*s.* 10*d.* per Milre, how many Milres are in
106*l.* 5*s.* 6¼*d.*? *Ans.* 364 $\mathcal{L}$, 375 Res.

— XVII. —

1. When the PAR of Exchange between Eng-
land and Holland is at 33*s.* 4*d.* Flemish, per Pound
Sterling, how much is a Gilder, of 20 Stivers, then
worth in London? *Ans.* 2*s.*

Example.

Example.

s. Flem.	s. Ster.	Stiv.
If $33\frac{1}{3}$	20	20
		3
100		60
6		20
600 Stivers.		
	Or thus,	1200 } 2 Shill.
	s. Ster.	600 }
s. d.		Stiv.
33 : 4	20	20
12		2
400 Groot.		40 Groot.
		20
		\$00 } 2 Shill.
		400 }

NOTE, *PAR*, in Trade or Commerce, is a Kind of Equality among Monies, or how much a Person must give of one Kind of Species, to render it just equivalent to a certain Quantity of another.

The *PAR* differs from the *Course of Exchange* in this, that the *PAR* of Exchange shews what one Nation should allow another in Exchange, which is certain and fixt ; but the *Course of Exchange* shews what they will allow in Exchange, which is uncertain, sometimes more, and sometimes less.

2. What is the *PAR* of Exchange between England and Holland, that is, how many Shillings Flemish, are equal to 20 Shillings sterling, when a Gilder, or 20 Stivers is equal to 2 Shillings sterling ? *Ans.* $33\frac{1}{3}$ Shill. Flemish.

O 2

3. When

3. When the PAR of Exchange between France and England was at 54 Pence sterling per Crown, of 3 Livres Tournois, what ought the PAR to be when that Crown is raised, in France, to 5 Livres? *Answ.* $32\frac{2}{3}d.$

4. What is the PAR of Exchange between England, and Ireland, if a Guinea passes in England for 21 Shillings, and a Crown for 5 Shillings, and in Ireland the same Guinea goes for 22s. 9d. and the Crown for 5 Shillings and 5 Pence? *Answ.* $8\frac{1}{3}$ per Cent.

5. If for 150*l.* English Money, there is paid 160*l.* 10*s.* Irish, what is the Exchange? *Answ.* 7 per Cent.

6. Which is it better for a Merchant in Ireland, to have Crowns sent him from England; or to draw at 7 per Cent. advance, when a Crown is 5*s.* in England, and 5*s.* 5*d.* in Ireland? *Answ.* 'Tis better to have Crowns sent him by $1\frac{1}{3}$ per Cent.

7. When the Exchange from London to Lisbon is at $5\frac{1}{2}i.$ per Milre, and the Exchange between London and Cork is at $8\frac{1}{4}$ per Cent. advance for Cork, how much is then a Milre worth at Cork? *Answ.* 5*s.* $11\frac{3}{4}d.$

8. If for 1037 $\frac{1}{4}$ French Crowns there is paid in London 142*l.* 13*s.* 9 $\frac{3}{4}d.$ what is the Exchange? *Answ.* 33*d.* per Crown.

9. What is the Exchange if for 314*l.* 5*s.* Irish Money there is paid in England 300*l.*? *Answ.* 4 $\frac{3}{4}$ per Cent.

10. When

10. When the Exchange between London and Rotterdam is $35\frac{3}{4}$ Shillings, Flemish, per Pound sterling, how much is an English Crown of 5*s*. then worth at Rotterdam? *Answ.* $53\frac{1}{2}$ Stivers.

11. If for 150*l.* 10*s.* sterling there is paid 252*l.* 1*s.* 9*d.* Flemish, what is the Exchange? *Answ.* $33\frac{1}{2}$ *s.* Flemish, per *l.* sterling.

12. At how much is the Exchange, when for 60*l.* English Money, there is paid 62*l.* 2*s.* Irish? *Answ.* $3\frac{1}{2}$ per Cent.

13. If a French Crown is worth at Rotterdam 2 Guilders, 8 Stivers, how much is that Crown worth at London, when the Exchange is at 35*s.* Flemish, per *l.* sterling? *Answ.* $4\frac{4}{5}$ *s.*

14. If for 850 $\text{fl.$, 500 Res, there is paid in London 226*l.* 16*s.* how much is then the Exchange? *Answ.* 5*s.* 4*d.* per Milre.

15. How much is the Exchange between Amsterdam and London, if a French Crown is worth at London, $4\frac{4}{5}$ *s.* sterling, and at Amsterdam 48 Stivers? *Answ.* 35*s.* Flemish, per *l.* ster.

16. When an English Shilling is worth 11 Stivers at Rotterdam, how much is then the Exchange? *Answ.* $36\frac{2}{3}$ *s.* Flemish, per *l.* ster.

17. When a Guinea at London is 21 Shillings, and at Rotterdam 11 Guilders, 11 Stivers, whether is it better to send Guineas to Rotterdam, or remit Bills of Exchange, at $36\frac{2}{3}$ *s.* Flemish, per *l.* sterling? *Answ.* 'Tis equal.

18. What is the Exchange between London and Hamburgh, when for 2443 Mark, $9\frac{1}{2}$ Stiver Lubs, there is paid in London 200*l.* 10*s.*? *Answ.* 32*s.* 6*d.* Gros Lubs, per *l.* ster.

19. What is a Gilder worth at Cork, if the Exchange between London and Rotterdam is at 35*s.* Flemish, per *l.* sterling, and the Exchange from Cork to London at 9 per Ct. advance?
Ans. $2\frac{8}{103}$ *s.*

Note, *A Shilling Flemish is 6 Stivers.*

Example.

<i>s.</i> Flem.	<i>s.</i>	Stiv.
If 35 —————	20 —————	20 comes $1\frac{1}{2}$ <i>s.</i>
<i>l.</i> Lond.	<i>l.</i> Cork,	<i>s.</i> Lond.
100 —————	109 —————	$1\frac{1}{2}$ <i>Ans.</i> $2\frac{8}{103}$ <i>s.</i>

Or thus,

Imagine two Columns, and in the first put any one of the given Numbers, and against it, in the second Column put its relative, then put in the first Column that which is of the same Name with the last of the second Column, and in the second Column put its relative, and so on, until the last in the second Column is of the same Name with the first in the first Column: For the Number sought put a (*) then multiply all the Numbers which stand under one another, continually together, and divide the Product of the Column which hath no (*) by the Product of the other Column, and the Quotient is the Answer required.

Example.

	Stiv.	
35 <i>s.</i> Flem. or 210		1 <i>l.</i> London,
London, <i>l.</i> 100		109 <i>l.</i> Cork,
how much at Cork*		20 Stiv. Rotterdam.
21000		2180
<i>Ans.</i> —————		<i>l.</i> equal to $2\frac{8}{103}$ <i>s.</i>
		21090

Or

Or thus,

London, l. 1		210 Stiv. Rotterdam,
Stiv. Rotterdam, 20		* how many l. Cork?
Cork, l. 109		100 l. London.
2180		21000
Answ. $\frac{2180}{21000}$ l. equal to $2\frac{8}{105}$ s.		

Or thus,

How many s. Cork*		20 Stiv. Rotterdam,
Stiv. at Rotterd. 210		1 l. London,
London, l. 100		109 l. Cork.
Answ. $2\frac{8}{105}$ s.		

Or thus,

London, l. 100		109 l. Cork,
How many s. Cork*		20 Stiv. Rotterd.
Stiv. at Rotterdam, 210		1 l. London.
Answ. $2\frac{8}{105}$ s.		

Or thus,

Cork, l. 109		100 l. London,
London, l. 1		210 Stiv. Rotterdam,
Stiv. at Rotterd. 210		* how many s. Cork.
Answ. $2\frac{8}{105}$ s.		

20. When the Exchange between London and Cork, is at 6 per Cent. advance for Cork, and the Exchange between London and Hamburgh at 33s. 4d. Gross, per l. Sterling, what is a Mark Lub then worth at Cork? Answ. $20\frac{4}{25}$ d.

21. How much would a French Livre of 20 Sols be worth at Cork when the Exchange between London

London and Paris, or any other Part of France, is at 34*d.* sterling, per Crown of 3 Livres, and the Exchange between London and Cork at 5 per Cent. advance for Cork? *Ans.* 11*7*/₈*d.*

22. When 105*l.* at Cork, is worth 100*l.* at London, and the Exchange between London and Paris at 36*d.* per Crown, of 3 Livres, or 60 Sols, how much is then 12*d.* of Cork worth at Paris? *Ans.* 19*1*/₂ Sols.

23. What is a Gilder of 20 Stivers worth at Cork, when the Exchange, between London and Rotterdam, is at 33*s.* 4*d.* Flemish, per *l.* Sterling, and the Exchange, between London and Cork, at 8*1*/₃ per Cent. advance, for Cork? *Ans.* 26*d.*

24. When the Exchange between London and Cork is at 8*1*/₂ per Cent. advance, for Cork, and the Exchange between London and Rotterdam is at 33*s.* 4*d.* Flemish, per *l.* sterling, how much is 12 Pence of Cork then worth at Rotterdam? *Ans.* 9*1*/₂ Stivers.

25. At how much ought the Exchange to be between London and Cork, to make the Money at a PAR, when a Crown in London is 5 Shillings, and the same Crown in Cork 5*s.* 5*d.*? *Ans.* 8*1*/₃ per Cent.

26. A Merchant in Lisbon owes to a Merchant in Cork 1000 Res . To know which is more advantageous to the Merchant in Cork, whether the Merchant in Lisbon sends him Moedores of 4000 Res a Piecc, which pass in Cork for 29*s.* 3*d.* a Piece, or to have the Debt remitted to London at 6*s.* 6*d.* per Milre; and from London remitted

remitted to Cork, at 8 per Cent. advance for Cork? *Answ.* 'Tis more advantageous to have Moidores sent him by $4\frac{1}{2}$ per Cent.

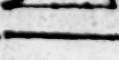
27. A Merchant at Cork sends to Bourdeaux in France 100 Barrels of Beef, which stand him, clear of all Charges at Bourdeaux 22s. per Barrel, I would know how many Livres they must be sold a Barrel at Bourdeaux to gain 20 per Cent. if the Money can be remitted to London at 36d. sterling, per Crown, and from London to Cork, at 8 per Cent. advance, for Cork? *Answ.* For 24 Livres, 8 Sols, $10\frac{2}{3}$ Deniers.

NOTE, This Question can be solved by 3 Figures besides the Stating.

— XIX. —

28. If 4lb. of A, are as heavy as 3lb. of B, and 5lb. of B, as 4lb. of C, and 6lb. of C, as 5lb. of D, how many lb. of D are then as heavy as 240lb. of A? *Answ.* 120lb. of D.

Example.

A	4		3	B
B	5		4	C
C	6		5	D
How many of	D *		240	A
	120		2400	120 lb. of D.

NOTE, All the Numbers that are the same in the first Column with those in the second may be cancelled in both, which will oftentimes save much Labour.

As

As thus,
 A 4 3 B
 B 8 4 C
 C 6 8 D
 D * 240 A

6 720 } 120

Or thus,
 A 4 3 B
 B 8 4 C
 2 C 6 8 D
 D * 240 A

Ans. 120

29. If 112*lb.* of Pewter at London cost 3*l.* 15*s.* how many Stivers will 1*lb.* cost at Rotterdam, if 100*l.* at Rotterdam are equal to 110*l.* at London, and the Exchange at 35 Shillings Flemish per *l.* Sterling? *Ans.* $7\frac{1}{2}\frac{6}{4}\frac{5}{8}$ Stivers.

30. If 3 Yards of Cloth cost as much as $3\frac{1}{4}$ of Ratteen, and $4\frac{1}{2}$ Yards of Ratteen are worth 5 Yards of Drugget, how many Yards of Drugget are then worth 27 Yards of Cloth? *Ans.* $37\frac{1}{2}$ Yards.

31. If 3 Yards in London, are equal to 4 Ells in Holland, and 50 Ells in Holland cost 26*l.* Flemish, how many *l.* Flemish, will 40 Yards, in London, come to? *Ans.* $27\frac{1}{3}\frac{1}{5}$ *l.* Flemish.

32. What will 1*lb.* of Pepper cost, if 3*lb.* of Cloves cost as much as 6*lb.* of Pepper, and $2\frac{1}{2}$ *lb.* of Cinnamon cost as much as 4*lb.* of Cloves, and 3*lb.* of Cinnamon cost 8 Shillings? *Ans.* 10*d.*

— XX. —

33. If 102*lb.* at Rotterdam is 112*lb.* in Cork, and a Tun of Tallow cost at Cork, 27*l.* and the Exchange from Cork to London, is 8 per Cent. advance,

advance, and the Exchange from London to Rotterdam at 34s. Flemish, for 1l. sterling. I demand how many Guilders 100lb. of the said Tallow will stand in at Rotterdam, without Freight or any other Charges? *Answ.* 12 Guilders, 10 Stivers.

Example.

lb. Rotterdam,	102	112 lb. Cork,
lb. Tallow,	2240	27 l. Cork,
l. Cork,	108	100 l. London,
l. London,	1	34 s. Flemish,
What will	*	100 lb. Rotterdam.

$$24678840 \left\{ \begin{array}{l} (16450560 \\ 1028160000 \end{array} \right\} 41 \text{ Shill.}$$

over 16450560
6

24|6 Stiv.

$$24678840 \left\{ 98703360 \right\} 4$$

12 : 6
add 4

Gil. 12 : 10

To shew with how few Figures the Answer of this Question may be attained to, I shall, for the Curious, give an Example, to shew what Labour often may be spared, when one rightly understands how to contract or lessen the Numbers of the first Column against the second, or those of the second against the first, keeping still the same Proportion.

Thus,

Thus,

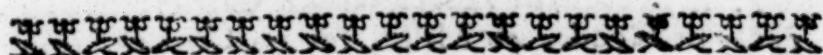
a 202	112 b
b 20.2240	27 c
c 4.208	200. 5b
1	204. 2a
*	200. 25c
2510 Stiv.	

Answ. Gil. 12 : 10

Here you see that the Figures made use of, besides the Stating of the Question are only 14, the Answer included, in which there are 7, so that, in Reality, only 7 Figures are employed, whereas if the Figures in the first Column had been multiplied in themselves, and also those of the second, and then those Products divided into one another, as the Nature of the Question required, no less than 155 Figures, excluding the Answer, would have done.

34. A Merchant, in Cork, has bought for his Correspondent in Lisbon, 1 Tun of Butter, which cost, with all Charges on Board, 25*lb.* now if 100 *lb.* of Cork are equal to 105*l.* at Lisbon, and the Exchange from London to Lisbon is at 6*s.* 3*d.* per Milre, and the Exchange from London to Cork at 5 per Cent. advance for Cork; I would know how many Res the said Butter will stand in Lisbon, without Freight, or other Charges there? *Answ.* 76 £ , 190 $\frac{1}{2}$ Res.

This Question is solved by 8 Figures, exclusive of the Answer and Stating.



C H A P. XXI.

The Double Rule of THREE DIRECT.

S E C T. I.

THIS Rule has its Name from having five Numbers given, to find a sixth in Proportion thereunto, of which five Numbers, there are three of Supposition, and two of Demand, and is resolved thus.

1. If 450*l.* in $8\frac{1}{3}$ Months gain 25*l.* at how much per Ct. is that per Annum? *Answ.* 8 per Ct.

Example.

$$\begin{array}{rcl}
 \begin{array}{c} l. \\ 450 \\ m. 8\frac{1}{3} \end{array} & \begin{array}{c} \diagup \\ \diagdown \end{array} & \begin{array}{c} l. \\ 25 \end{array} \\
 & & \begin{array}{c} \diagup \\ \diagdown \end{array} \begin{array}{c} l. \\ 100 \\ 12 m. \end{array} \\
 \hline & & \hline
 28 & & 1200 \\
 & & 3 \\
 \hline & & 8600 \\
 & & 4330 \left. \begin{array}{l} \\ \\ \end{array} \right\} 8 \text{ Ans.w.} \\
 & & 4
 \end{array}$$

Or thus,

$$\begin{array}{rcl}
 m. & l. & m. \\
 \text{If } 8\frac{1}{3} & 25 & 12 \text{ comes } 36 \\
 \text{If } 450 & 36 & 100 \text{ Ans.w. } 8
 \end{array}$$

2. If 240*l.* in 16 Months, gain 64*l.* how much will 60*l.* gain in 6 Months? *Answ.* 6*l.*

3. If 60*l.* gain in 6 Months 6*l.* what will 240*l.* gain in 16 Months? *Answ.* 64*l.*

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4. A Merchant agrees with a Carrier, to carry 15 Ct. of Goods, 40 Miles, for 10 Crowns, (each Crown 65d.) how much must one pay, in Proportion, to have 6 Ct. carried 32 Miles? *Ans.* 17s. 4d.

5. If 20 Ct. are to be carried 50 Miles for 5l. how much will 40 Ct. cost if they were to be carried 100 Miles? *Ans.* 20l.

6. How much will $32\frac{2}{3}$ l. gain in 4 Months and 15 Days (each Month 30 Days) if 324l. gain in 14 Months 35l. *Ans.* 1l. 2s. 6d.

7. If $32\frac{2}{3}$ l. get $1\frac{1}{8}$ l. in 4 Months, how much will 324l. get in 14 Months? *Ans.* 35l.

8. If 1 lb. of Thread makes 3 Yds. of Linen of $1\frac{1}{4}$ Yard broad, how many lb. of Thread would be wanted to make a Piece of Linen of 45 Yards long, and 1 Yard broad? *Ans.* 12 lb.

9. If 3 lb. of Worsted make 10 Yards of Stuff of $1\frac{1}{2}$ Yard broad, how many lb. would be wanted to make a Piece of 100 Yards long, and $1\frac{1}{4}$ broad? *Ans.* 25 lb.

10. If $\frac{1}{2}$ a Yard of Cloth, of $1\frac{1}{4}$ Yard broad, is made with $\frac{1}{4}$ lb. of Yarn, how many lb. will be wanted to make a Piece of Cloth of 80 Yards long, and $\frac{3}{4}$ Yard broad? *Ans.* $17\frac{1}{7}$ lb.

11. If $15\frac{1}{8}$ lb. of Worsted make $15\frac{1}{4}$ Yards of Cloth of $1\frac{1}{2}$ Yard broad, how many lb. of Worsted will be wanted to make a Piece of Cloth of $75\frac{1}{2}$ Yards long, and $1\frac{1}{4}$ Yard broad? *Ans.* $60\frac{6}{13}$ lb.

12. If 12 Men in 8 Days gain 8l. 8s. what will 28 Men gain in 15 Days? *Ans.* 36l. 15s.

13. What

The Double Rule of Three Direct. 171

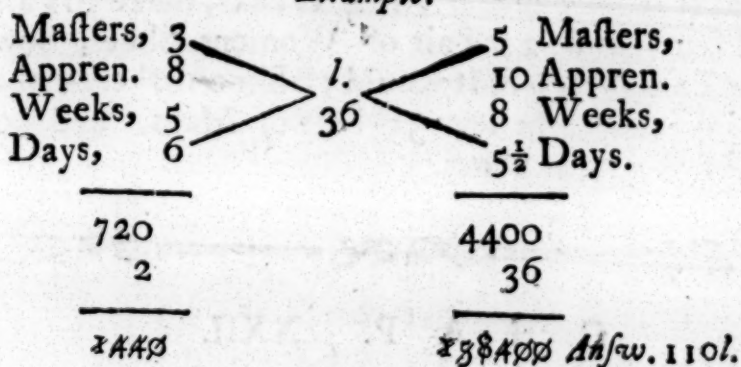
13. What will 12 Men gain in 8 Days, if 28 Men in 15 Days gain 36*l.* 15*s.*? *Answ.* 8 $\frac{2}{3}$ *l.*

14. If I had a Bond for 876*l.* 14*s.* 10*d.* payable in 79 Days, and agreed to receive said Money immediately, with 6 per *Ct.* per Annum, Abatement, I demand how much I am to receive? *Answ.* 865*l.* 7*s.* 1 $\frac{40}{912\frac{2}{3}}$ *d.*

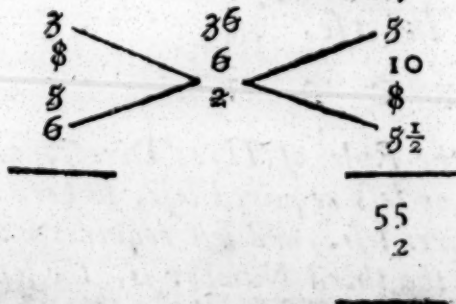
— II. —

15. If 3 Masters, who have each 8 Apprentices, in 5 Weeks, each Week 6 Days, earn 36*l.* how much will 5 Masters, who have each 10 Apprentices, earn in 8 Weeks, each Week 5 $\frac{1}{2}$ Days, their daily Wages being equal to the former? *Answ.* 110*l.*

Example.



Or thus,



Answ. 110*l.*

16. If a Cistern of 16 Feet long, 7 Feet broad, and 15 Feet deep, cost $\text{9} \text{ l. } 6 \text{ s. } 8 \text{ d.}$ I demand how much, in Proportion, another Cistern would stand in, of $17\frac{1}{2}$ Feet long, $10\frac{1}{2}$ Feet broad, and 13 Feet deep? *Ans.* $\text{13} \text{ l. } 5 \text{ s. } 5 \text{ d.}$

17. How many Stones, of $\frac{3}{4}$ Foot long, $\frac{2}{3}$ Foot broad, and $\frac{4}{5}$ Foot thick, would build a Wall of 160 Feet long, 30 Feet high, and 2 Feet thick? *Ans.* 24000.

18. If a Cistern of $17\frac{1}{2}$ Feet long, $10\frac{1}{2}$ Feet broad, and 13 Feet deep, holds 546 Barrels of Water, how many Barrels will a Cistern hold of 16 Feet long, 7 Feet broad, and 15 Feet deep? *Ans.* 384 Barrels.

19. If 6 Shoe-makers, in 4 Weeks, make 36 Pair of Mens, and 24 Pair of Womens Shoes, how many Pair of each Sort would 18 Shoe-makers make in 5 Weeks? *Ans.* 135 Pair of Mens, and 90 Pair of Womens Shoes.



C H A P. XXII.

Of Inverse Proportion, or, the Rule of Three Inverse.

S E C T. I.

WHEREAS, in the Rule of Three Direct, more required more, or less required less, so here the contrary, more requires less, and less requires more. That is, the greater the third Number is, the lesser the fourth will be, and the lesser the third Number is, the greater the fourth will be.

R U L E.

RULE. Let your first and last Number be of one Name, then multiply your first and second Number together, and the Product divide by the third Number, and the Quotient is the Answer required.

1. A Captain of a Ship being provided with Provisions for 40 Men 10 Months, how long would the said Provisions last for 32 Men? *Ans.* $12\frac{1}{2}$ Months.

Example.

Men	Months	Men
40	10	32
10		
—		
400	{	$12\frac{1}{2}$
322		
3		

2. If $12\frac{1}{2}$ Months Provision serve 32 Men, how long would the same serve 40 Men? *Ans.* 10 Months.

3. A Merchant has agreed with a Carrier to carry 12 Ct. of Merchandizes 70 Miles, for 13 Crowns, but the Cars being laden, the Carrier is obliged to unlade 2 Ct. of the said Goods, however, the Merchant will still give the 13 Crowns, provided he carries the Goods so much farther, in Proportion : I demand how many Miles they must be carried? *Ans.* 84 Miles.

4. If 10 Ct. are to be carried 84 Miles for 13 Crowns, how many Miles are 12 Ct. to be carried for the same Money? *Ans.* 70 Miles.

5. If I had bought 30 Yards of Cloth, of 2 Yards broad, and would have Bays of 3 Yards broad to line the same withal; I demand how many Yards I should want? *Ans.* 20 Yards.

6. If I lend my Friend 400*l.* for 7 Months, how much Money ought he to lend me again for 12 Months? *Ans.* 233*l.* 6*s.* 8*d.*

7. Suppose 4000 Soldiers, in a Town, were provided with Provisions for 3 Months, how many Men must they send out in Case they would have the Provisions last 8 Months? *Ans.* 2500 Men.

8. When the Bushel of Wheat costs 5*s.* 8*d.* the Penny Loaf weighs $11\frac{1}{2}$ oz. what must it weigh when the Bushel costs 10*s.* 9*d.*? *Ans.* $6\frac{8}{15}$ oz.

9. If 136 Masons can make a Fort in 28 Days, and that it was required to have the same finished in 8 Days, I demand how many Masons would do it? *Ans.* 476 Masons.

10. How many Yards of Linen, of $\frac{3}{8}$ Yard broad, would be wanted to line $9\frac{2}{3}$ Yards of Cloth of $1\frac{1}{4}$ Yard broad? *Ans.* $14\frac{1}{2}$ Yards.

11. If a Horseman rides 100 Miles in 33 Hours, 20 Minutes, that is, at the Rate of 3 Miles an Hour, in what Time would he ride the same Distance, if he went at the Rate of $5\frac{1}{4}$ Miles an Hour? *Ans.* 19 Hours, $2\frac{6}{7}$ Minutes.

12. If with 100*l.* in 365 Days I gain 6*l.* with how many Pounds, sterling, could I gain the same Sum in 30 Days? *Ans.* With 1216*l.* 13*s.* 4*d.*

13. If

The Double Rule of Three Compound. 175

13. If 6 Persons in 4 Hours drink 3 Gallons of Beer, in what Time would 5 Persons drink the same Quantity if they drink at the same Rate? *Answ.* in 4 Hours 48 Minutes.

14. What Sum ought to be put at Interest, at 6 per Ct. to gain in one Month as much as 100*l.* would gain in 12 Months? *Answ.* 1200*l.*



C H A P. XXIII.

The Double Rule of Three Compound.

S E C T. I.

T HIS Rule, like the Double Rule of Three Direct, contains also two Rules of Three, but the one is Direct, and the other Inverse.

1. If 100*l.* in 12 Months gain 5*l.* with how many Pounds can I gain, in 16 Months, 30*l.*? *Answ.* 450*l.*

Example.

	16	Stock,	12	
	12		16	Inverse
M.		100		30
Gain	5			Direct
	80			
			360	
			100	
			4	
			36000	}
			8880	450 <i>l.</i>

Or

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Or thus, by Direct Rules.

M.	Gain	M.	
If 12	5	16 comes	$6\frac{2}{3}$.
Gain	Stock	Gain	
If $6\frac{2}{3}$	100	30	Ans. 450l.

Or thus,

	M.	l.	M.	
Inverse	12	100	16 comes	75l.
Direct	5	75	30	Ans. 450l.

2. With how many Pounds Sterling, could I gain 5l. per Annum, if with 450l. I gain in 16 Months 30l. ? *Ans.* With 100l.

3. If 8l. are gained in 12 Months with 100l. with how much Money can I gain 8l. 12s. in 5 Months ? *Ans.* With 258l.

4. If 200lb. of Merchandizes are carried 40 Miles for 3s. how many lb. might be carried 60 Miles, for 22l. 14s. 6d. ? *Ans.* 20200lb.

5. If a Wall of 28 Feet high is built in 15 Days by 68 Men, how many Men could build a Wall of 32 Feet high in 8 Days ? *Ans.* 145 $\frac{1}{2}$ Men.

6. If for 3s. 200lb. of Merchandizes are carried 40 Miles, how many Miles might 20200lb. be carried for 22l. 14s. 6d. ? *Ans.* 60 Miles.

7. If 145 Men in 8 Days, can make a Wall of 32 Feet high, how many Men would make another Wall of 28 Feet high, in 15 Days ? *Ans.* 67 $\frac{2}{3}$ Men.

8. If 80000 Ct. of Ammunition were to be removed from a Place in 9 Days, and that in 6 Days Time I find to have carried away 4500Ct. with 18 Horses,

Horses, how many Horses would be wanted to carry the Remainder away in 3 Days? *Ans.* 604 Horses.

9. In what Time could I, with 600*l.* gain 33*l.* 6*s.* 8*d.* at 6 $\frac{1}{4}$ per Cent. per Annum? *Ans.* In 10 Months, 20 Days, or in 10 $\frac{2}{3}$ Months.

10. If 33 $\frac{1}{3}$ *l.* are gained, with 600*l.* in 10 $\frac{2}{3}$ Months, in what Time could I get 6 $\frac{1}{4}$ *l.* with 100*l.*? *Ans.* In 1 Year.



C H A P. XXIV.

OF I N T E R E S T.

S E C T. I.

HOW much is the Interest of 100*l.* for 4 $\frac{1}{2}$ Years, at the Rate of 8 per Ct.? *Ans.* 36*l.*

Example.

Year	l.	Years	
1	8	4 $\frac{1}{2}$	
2		<u> </u>	Or thus,
		9	8
		8	<u>4</u>
		<u>—</u>	4 Years 32
		72 { 36 <i>l.</i>	$\frac{1}{2}$ Year 4
		22 {	<u> </u>
			<i>Ans.</i> 36 <i>l.</i>

2. What is the Interest of 100*l.* for 5 Years and 3 Months, at the Rate of 8 per Cent.? *Ans.* 42*l.*

3. How much is the Interest of 100*l.* for 1 Year and 9 Months, at 6 per Cent.? *Ans.* 10*l.* 10*s.*

4. What

4. What is the Interest of 100*l.* for $7\frac{1}{2}$ Months, at 7 per Cent. ? *Ans*w. 4*l.* 7*s.* 6*d.*

5. Cast up the Interest of 100*l.* for 10 Years, and 4 Months, at 6 per Cent. ? *Ans*w. 62*l.*

6. Tell me the Interest of 100*l.* for $1\frac{1}{2}$ Month, at 8 per Cent. ? *Ans*w. 1*l.*

— II. —

7. What is the Interest of 211*l.* 5*s.* for one Year, at 6 per Cent. ? *Ans*w. 12*l.* 13*s.* 6*d.*

Example.

l.	s.
211	5
	6
£. 12	10
	20
s. 13	50
	12
d. 6	100

8. How much is the Interest of 300*l.* 10*s.* for 1 Year, at the Rate of 8 per Cent. ? *Ans*w. 24*l.* 0*s.* $9\frac{3}{4}$ *d.*

9. What will the above Sum come to, for 9 Months ? *Ans*w. 18*l.* 0*s.* $7\frac{1}{2}$ *d.*

10. Cast up the Interest of 580*l.* 15*s.* for 1 Year at 6 per Cent. ? *Ans*w. 34*l.* 16*s.* $10\frac{2}{3}$ *d.*

11. Tell me the Interest of 344*l.* 17*s.* 6*d.* for 1 Year, at the Rate of 6 per Cent. ? *Ans*w. 20*l.* 13*s.* $10\frac{1}{3}$ *d.*

— III. —

12. What is the Interest of 340*l.* for $1\frac{1}{2}$ Year, at 8 per Cent.? *Ans*w. 40*l.* 16*s.*

May Example. See p. 10.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
<i>l.</i> 340	for 1 Year	27	: 4 : 0
8	$\frac{1}{2}$ Year	13	: 12 : 0
	<i>Ans</i> w	40	: 16 : 0
<i>l.</i> 27			
20			
<i>s.</i> 4			
100			

13. Cast up the Interest of 1000*l.* for 15 Months, at 8 per Cent.? *Ans*w. 100*l.*

14. What will the above Sum come to, for 21 Months? *Ans*w. 140*l.*

15. Tell me the Interest of 1090*l.* for 17 Months, at 8 per Cent.? *Ans*w. 123*l.* 10*s.* 8*d.*

16. How much will the Interest of the foregoing Sum come to, for 23 Months? *Ans*w. 167*l.* 2*s.* 8*d.*

17. What is the Interest of 150*l.* for $3\frac{1}{2}$ Months, at 8 per Cent.? *Ans*w. 3*l.* 10*s.*

18. Cast up the Interest of 514*l.* for 1 Year 7 $\frac{1}{2}$ Months, at 8 per Ct.? *Ans*w. 66*l.* 16*s.* 4 $\frac{4}{5}$ *d.*

— IV. —

19. How much is the Interest of 348*l.* 15*s.* for 18 Months, at 7 per Cent.? *Ans*w. 36*l.* 12*s.* 4 $\frac{1}{2}$ *d.*

Example:

Example.

$$\begin{array}{r} \text{l.} \quad \text{s.} \\ 348 : 15 \\ \quad \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} \text{£.} 24 \text{ } 41 : 5 \\ \quad \quad 20 \\ \hline \end{array}$$

$$\begin{array}{r} \text{s.} 8 \text{ } 25 \\ \quad \quad 12 \\ \hline \end{array}$$

$$\text{d. } 3 \text{ } 100$$

$$\begin{array}{r} \text{l.} \quad \text{s.} \quad \text{d.} \\ \text{for 1 Year} \quad 24 : 8 : 3 \\ \text{for } \frac{1}{2} \text{ Year} \quad 12 : 4 : 1\frac{1}{2} \\ \hline 36 : 12 : 4\frac{1}{2} \end{array}$$

20. At 8 per Ct. what will 468*l.* 16*s.* 8*d.* come to, for 1 Month? *Answ.* 3*l.* 2*s.* 6*½d.*

21. At 7 per Cent. tell me what will 3800*l.* 14*s.* 4*d.* come to, for 1 $\frac{2}{3}$ Year? *Answ.* 354*l.* 14*s.* 8 $\frac{4}{5}$ *d.*

22. What will 3020*l.* come to, for 5 $\frac{1}{2}$ Months, at 8 per Cent.? *Answ.* 110*l.* 14*s.* 8*d.*

23. How much is the Interest of 175*l.* 10*s.* 6*d.* for 1 Year, 7 Months, at 6 per Cent.? *Answ.* 16*l.* 13*s.* 5 $\frac{2}{3}$ *d.*

24. Cast up the Interest of 886*l.* 16*s.* for 1 Year 11 $\frac{1}{2}$ Months, at 1 per Cent.? *Answ.* 138*l.* 18*s.* 7 $\frac{1}{2}$ *d.*

— V. —

25. How much is the Interest of 100*l.* from the 7th of May, to the 26th of September, at 8 per Cent.? *Answ.* 3*l.* 2*s.* 2 $\frac{2}{3}$ *d.*

Example.

Of Interest.

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Example.

May 24 Days,

June 30

July 31

Aug. 31

Sep. 26

d. 1. —

If 365 — 8 — 142 ? *Answ.* 3l. 2s. 27²/₃d.

26. What is the Interest of 100l. from the 4th of March to the 29th of September, at 7 per Ct. ?

Answ. 4l. 0s. 17¹/₃d.

27. At 6 per Cent. what will the Interest of 100l. be, from the 5th of July to the 9th of January ?

Answ. 3l. 1s. 9¹/₃d.

28. Cast up the Interest of 100l. at 8 per Cent. from the 6th of June to the 28th of December ?

Answ. 4l. 9s. 10²/₃d.

29. Tell me the Interest of 100l. from the 10th of May to the 30th of August, at 8 per Cent. ?

Answ. 2l. 9s. 1¹/₃d.

30. How much is the Interest of 100l. from the 3d of April to the 25th of February, at 7 per Cent. ? *Answ.* 6l. 5s. 9¹/₃d.

— VI. —

31. How much is the Interest of 175l. for 1 Year and 73 Days, at 8 per Cent. ? *Answ.* 16l. 16s.

Example.

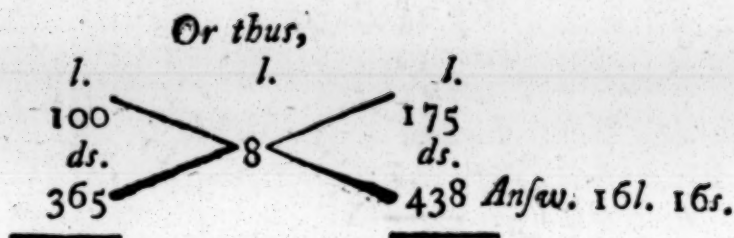
l.	l.	l.	l.	s.
100	— 8 —	175	comes 14	: 0
ds.	l.	ds.		

365	— 14 —	73	comes 2	: 16
-----	--------	----	---------	------

Answ. £. 16 : 16

Q

Or



32. Cast up the Interest of 240*l.* for 1 Year and 135 Days, at 7 per Cent. *Answ.* 23*l.* 0*s.* 3 $\frac{2}{3}$ *d.*

33. What is the Interest of 371*l.* for 1 Year and 213 Days, at 6 per Cent. ? *Answ.* 35*l.* 5*s.* 0 $\frac{3}{4}$ *d.*

34. Tell me the Interest of 564*l.* for 1 Year, 335 Days, at 8 per Cent. ? *Answ.* 86*l.* 10*s.* 7 $\frac{1}{3}$ *d.*

35. How much is the Interest of 150*l.* 15*s.* 6*d.* for 53 Days, at 7 per Cent. ? *Answ.* 1*l.* 10*s.* 7 $\frac{1}{8}$ $\frac{7}{16}$ $\frac{3}{8}$ *d.*

— VII. —

36. A Merchant borrows at Interest 250*l.* at 8 per Cent. for 2 Years, with Condition to pay before the Time as much of the Principal as he pleases, now, at the Expiration of 9 Months, he pays 80*l.* and 6 Months after 70*l.* leaving the Rest the full Time, of the aforesaid 2 Years; I would know how much, Principal and Interest, said Merchant is then to pay ? *Answ.* 127*l.* 16*s.* 0*d.*

Example.

Of Interest.

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Example.

$$\begin{array}{rcl}
 \text{l.} & \text{l.} & \text{l.} \\
 100 & & 250 \\
 12 & \text{comes} & 9 \\
 \hline
 1200 & & 2250 \quad 250 \\
 & & 80
 \end{array}$$

Interest
15*l.* 0*s.* 0*d.*

$$\begin{array}{rcl}
 100 & & 170 \\
 12 & \text{comes} & 6 \\
 \hline
 & & 170 \\
 & & 70
 \end{array}$$

6 : 16 : 0

21 : 16 : 0

$$\begin{array}{rcl}
 & & 100 \\
 \text{l.} & \text{l.} & \text{l.} \\
 100 & & 100 \\
 12 & \text{comes} & 9 \\
 \hline
 & & 6 : 00 : 00
 \end{array}$$

Interest 27 : 16 : 00
Principal 100 : 00 : 00

Answ. £. 127 : 16 : 00

37. Suppose I borrow at Interest 300*l.* at 6 per Cent. for 18 Months, with Condition to pay as much of the Principal, before the Time, as I please; now after 3 Months Time I pay 60*l.* and 4 Months after that 100*l.* and 5 Months after that I pay 75*l.* to know how much I have yet to pay for Principal and Interest at the Expiration of the said 18 Months?
Answ. 79*l.* 15*s.* 0*d.*

38. Lent at Interest 600*l.* the 13th of May 1717, for 1 Year, at the Rate of 5 per Cent. with Condition that the Receiver may discharge as much of the Principal before the Time as he pleases; now he pays the 9th of July 200*l.* and the 17th of September 150*l.* to know how much Principal

Q 2

and

and Interest he is more to pay at the Expiration of the Year, counting it 365 Days? *Answ.* 266*l.* 13*s.* 5 $\frac{7}{3}$ *d.*

39. A gives to B, at Interest, Anno 1717, primo Novembris 600*l.* at 4 $\frac{1}{2}$ per Cent. B to repay him, with Interest, at the Expiration of 2 Years; having Liberty to pay before that Time as much of the Principal as he pleases; now B pays

The 16th of December, 1717, — £. 900

The 11th of March, — — 1260

The 30th of Ditto, — — — 600

The 17th of August, — — — 800

The 12th of February, 1719, — — 1048

I would know how much Principal and Interest B, primo Nov. Anno 1719, is to pay? *Answ.* 1642*l.* 9*s.* 2 $\frac{1}{8}$ $\frac{4}{3}$ *d.*



C H A P. XXV.

Of INTEREST upon INTEREST.

S E C T. I.

WHAT will 500*l.* amount to for 3 Years, at 8 per Cent. Interest upon Interest, *Answ.* 629*l.* 17*s.* 1 $\frac{1}{3}$ $\frac{4}{3}$ *d.*

Example.

<i>l.</i>	<i>l.</i>	<i>l.</i>	<i>l.</i>	<i>s.</i>
If 100	— 108	— 500	comes 540	: 0 the 1st Year.
100	— 108	— 540	comes 583	: 4 the 2nd Year.
100	— 108	— 583	: 4	<i>Answ.</i> 629 : 17 : 1 $\frac{1}{3}$ $\frac{4}{3}$ the 3d Year.

Or

Of Interest upon Interest.

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Or thus,

Prin. Int. Prin. Interest
If 100—8—500 comes 40 : 0 the 1st Year,
40

100—8—540 comes 43 : 4 the 2d Year,
43 : 4

100—8—583:4 comes 46 : 13:1 $\frac{1}{2}$ the 3d Year.
Principal 500:00:0

Answ. 629 : 17 : 1 $\frac{1}{2}$

Or thus,

l. l. l.
100 — 108 — 500
20

10000

12

120000

108

960000

1200000

3728(1 } the 1st Year 129600(00
251263 } 1259(7 108
22 } 1036800
Answ. 629 : 17 : 1 $\frac{1}{2}$ 1296000

2d Year 139968(00
108

1119744
1399680

3d Year 151165(44

Q 3

SCHO.

S C H O L I U M.

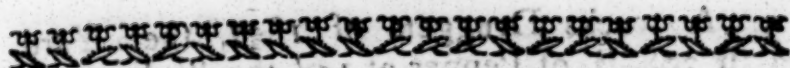
✎ Although it be according to the Laws and Custom of *Ireland*, to compute Interest at the Proportion of 6 per Cent. yet he that takes up Money at Interest for any Time less than even or compleat Years, pays more Interest than seems reasonably due, according to the Rules of Art; as for Instance, if 100*l.* be forborn at Interest one whole Year, it amounts to 106*l.* but (I say) if it be repaid at the half Year's End, it should not amount to 103*l.* as appears from this following Proportion.

Let a = be the Amount due at the half Year's End, then it will be $100 : : a : 106$ the Amount at the Year's End. Ergo, $aa = 10600$, and $a = \sqrt{10600} = 102\ 9563 = 102*l.* 19*s.* 1½*d.*$ which is less than 103*l.* by 10½*d.* and if it be paid in less than ½ a Year's Time, the Error must needs be the greater.

Mr. *Ward* places this Scholium at the End of his Chapter of Simple Interest, but it seems more properly to belong to Compound Interest: for, if 100*l.* be forborn at Interest one whole Year, it amounts to 106*l.* but if it be repaid at the half Year's End, it amounts according to the Rules of Simple Interest laid down by *Ward*, to 103*l.* exactly; but according to the Rules of Compound Interest, laid down by the same Author, it amounts to 102*l.* 19*s.* 1½*d.* only, as Mr. *Ward* remarks.

The celebrated Mathematician, *Philip Ronayne*, Esq; observes, that altho' it be not lawful to let out Money at Compound Interest; yet, in purchasing of Annuities or Pensions, &c. and taking Leases in Reversion, it is very usual to allow Compound Interest to the Purchaser for his ready Money; and therefore it is very requisite to understand it.

C H A P.



C H A P. XXVI.
Of B A R T E R.

S E C T. I.

- I. **A** Merchant barter 10 Pieces of Drugget, containing each 25 Yards, at $18\frac{1}{2}d.$ the Yard, against Pepper of $15d.$ the *lb.* how much Pepper must he receive? *Answ.* $308\frac{1}{3}lb.$

Example.

10 Ps.	
25	
250	
18 $\frac{1}{2}$	
2000	
250	
125	
4625	

(5	}	
228		
4628		
2888		
22		
		$308\frac{1}{3}lb.$

2. A Merchant has 1000*lb.* of Sugar, which he barter at $9\frac{1}{2}d.$ the *lb.* against Tobacco at $10\frac{1}{4}d.$ the *lb.* how much Tobacco must he receive? *Answ.* $926\frac{3}{4}lb.$

3. A gives to B 250 Yards of Drugget, at $18\frac{1}{2}lb.$ the Yard, for $308\frac{1}{3}lb.$ of Pepper, I demand at how much the Pepper stands him in the *lb.*? *Answ.* $15d.$

4. A has 1200 Stone of Tallow, at $2s. 3\frac{1}{4}d.$ the Stone, B. has 110 tann'd Hides, wt. 3994*lb.* at $5\frac{3}{4}d.$ the *lb.* and they barter at these Rates, tell me how much Money A is to receive of B, besides the Hides? *Answ.* 40*l.* 11*s.* $2\frac{1}{2}d.$

5. A trucks Druggets of $18\frac{1}{2}d.$ the Yard, against $308\frac{1}{3}lb.$ of Pepper at $15d.$ the $lb.$ how many Pieces of Drugget (every Piece 25 Yards) has he delivered? *Ans.* 10 Pieces.

— II. —

6. A has Silk of $14s.$ per $lb.$ B has Cloth of $10s.$ per Yard, which he barter at $12s. 6d.$ the Yard, at how much must A charge his Silk, to make his Profit equal with B? *Ans.* $17s. 6d.$

Example.

$\begin{array}{cccc} s. & s. & d. & s. \\ \text{If } 10 & - & 12 : 6 & - & 14 \end{array}$ *Ans.* $17s. 6d.$

Or thus,

$\begin{array}{cc} s. & d. \\ 12 & : 6 \\ 10 & : 0 \end{array}$

$\begin{array}{ccccccc} s. & & & s. & s. & d. \\ \text{If } 10 & - & & 2 : 6 - & 14 & \text{comes } 3 & . 6 \\ & & & & & 14 & : 0 \\ & & & & & \hline & & & & & \text{Ans. } 17 & : 6 \end{array}$

7. A has Coffee which he barter with B at $10d.$ per $lb.$ more than it cost him, against Tea which stands B in $10s.$ the $lb.$ but charges it at $12\frac{1}{2}s.$ I would know how much the Coffee cost at first? *Ans.* $3s. 4d.$

8. A has 150 Barrels of Barley, which cost him $5s.$ per Barrel, which he barter at $5s. 10d.$ with B, who has Wheat that cost him $12s.$ the Barrel, at how much must B charge his Wheat to gain in Proportion as much as A, and how many Barrels is he to deliver? *Ans.* $62\frac{1}{2}$ Barrels at $14s.$

9. Two

9. Two Persons barter, the one has Butter, which cost him 28*s.* per *Ct.* the other has Beef which cost 22*s.* 6*d.* per Barrel; now, they have both a Mind to gain 8 per *Ct.* tell me at how much they must charge their Goods? *Answ.* At 30*s.* 2 $\frac{2}{3}$ *d.* per *Ct.* and at 24*s.* 3 $\frac{3}{5}$ *d.* per Barrel.

10. A and B barter some Goods, A charges his at 30 $\frac{6}{5}$ *s.* and then he gains 8 per Cent. B gains the same, for he charges his at 24 $\frac{3}{10}$ *s.* let me know how much these Goods cost at first? *Answ.* 28*s.* and 22*s.* 6*d.*

— III. —

11. B has 5 Tuns of Butter at 25*l.* 10*s.* per Tun, and 10 $\frac{1}{2}$ Tuns of Tallow at 33*l.* 15*s.* per Tun, which he barter with C, thus, to have 150*l.* 1*s.* 6*d.* in Money, and the rest in Beef at 21*s.* per Barrel, how many Barrels is he to receive? *Answ.* 316 Barrels.

Example.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
5 Tuns at 25 $\frac{1}{2}$ <i>l.</i> is	127	10	0
10 $\frac{1}{2}$ Tuns at 33 $\frac{3}{4}$ <i>l.</i> is	354	7	6
	l. 481	17	6
In Cash, 150	150	1	6
<i>s.</i> Bar.			
If 21 — 1 —	331	16	0 <i>Answ.</i> 316

12. A has 5 Bales of Pepper, wt. neat 1600*lb.* at 17*d.* per *lb.* which he barter with B for two Sorts of Goods, the one at 5*d.* the other at 8*d.* per *lb.* to have $\frac{1}{3}$ in Money, and of each Sort of Goods an equal Quantity. I demand how many *lb.*

lb. of each Sort of Goods, and how much Money he is to receive? *Ans.* 1394 $\frac{1}{2}$ *lb.* of each, and 37*l.* 15*s.* 6 $\frac{2}{3}$ *d.* in Money.

13. Two Merchants barter, C has 10 Hhds of Madder, qt. neat, 90*Ct.* 3*qrs.* 14*lb.* cost 38*s.* 6*d.* per *Ct.* and charges it at 42*s.* per *Ct.* D has Hemp which cost 34*s.* 10*d.* per *Ct.* C desires $\frac{1}{4}$ in Money the Rest in Hemp; tell me how much Money and Hemp C is to receive, also at how much D must charge the Price of the Hemp, to make the Barter equal? *Ans.* C must receive 47*l.* 14*s.* 2 $\frac{1}{4}$ *d.* and 75*Ct.* 1 *qr.* 9 $\frac{1}{8}$ *lb.* of Hemp, at the Rate of 38*s.* per *Ct.*

14. C barter 10 Hhds. of Madder, qt. 90*Ct.* 3*qrs.* 14*lb.* which he charges at 42*s.* per *Ct.* for which D is to give him $\frac{1}{4}$ Part in Money and the Rest in Hemp, which cost him 34*s.* 10*d.* per *Ct.* but charges it at 38*s.* what is the first Cost of the Madder, allowing C raised his Price in Proportion to D, and how much Money and Hemp is C to receive? *Ans.* The Madder cost 38*s.* 6*d.* per *Ct.* and C is to receive 47*l.* 14*s.* 2 $\frac{1}{4}$ *d.* in Money, and 75*Ct.* 1 *qr.* 9 $\frac{1}{8}$ *lb.* in Hemp.

— IV. —

15. I have Merchandizes, which cost me 30*s.* per *Ct.* but charge them at 34*s.* he has Merchandizes which cost him 25*s.* per *Ct.* and charges them at 28*s.* per *Ct.* and we barter our Goods; now I want to know who has made the best Bargain, and by how much per *Ct.*? *Ans.* I gain $1\frac{1}{3}$ per *Ct.* more than he.

Example.

Example.

s.	s.	s.	
If 30 —	4 —	100	Ans ^w . $13\frac{1}{3}$
If 25 —	3 —	100	Ans ^w . 12

Differs $1\frac{1}{3}$.

16. A and B barter, A has Cloth which cost 28*d*. the Yard, but charges it at 32*d*. B has Cloth cost 22*d*. the Yard, tell me how high B must charge his Cloth to gain 5 per Ct. more than A? Ans^w. $26\frac{1}{7}$ per Ct.

17. A and B barter, A has Cloth which cost him 28*d*. the Yard, B's cost 22*d*. and charges it at 25*d*. tell me how high A must charge his to gain 10 per Ct. more than B? Ans^w. $34\frac{2}{3}$ *d*.

18. C and D barter, C makes of 7*s*. 6*d*. 8*d*. D makes of 7*s*. 6*d*. 7*s*. 3*d*. I demand who has lost most, and how much per Ct.? Ans^w. C loses $1\frac{2}{7}$ per Ct. more than D.

19. A charges his Merchandize from 3*l*. 10*s*. to 4*l*. 6*s*. B charges his from 1*l*. 16*s*. to 2*l*. 4*s*. and so they barter. A has a Mind to gain yet 10*s*. more. I demand how high B must put his Price to make the Barter equal? Ans^w. 2*l*. $9\frac{1}{3}$ *s*.

20. A and B barter, A has Muslin which cost him 30*s*. per Piece, but has a Mind to gain 10 per Ct. B has Silk, which cost 42*s*. per Piece; tell me at how much B must charge his Silk to make the Barter equal? Ans^w. $46\frac{1}{3}$ *s*.

21. A has Sugar which cost him 59*s*. 6*d*. per Ct. and has a Mind to gain 15 per Ct. B has Oyl which cost 6*s*. 3*d*. per Gallon; at how much must B charge his Oyl to gain as much per Ct. as A? Ans^w. At 7*s*. $2\frac{1}{4}$ *d*.

— V. —

22. I have Cloth of 8*d.* the Yard, and in Barter charge it at 13*d.* and give 9 Months Time for the Payment ; he has Goods which cost 12*d.* per *lb.* and gives 6 Months Time for the Payment ; tell me how high he must charge his Goods to make an equal Barter ? *Answ.* At 17*d.*

NOTE, *Lessen one Man's Profit according to the other Man's Time.*

Example.

$$\begin{array}{rcccl}
 & & 13d. & & \\
 & & 8 & & \\
 m. & & \hline
 \text{If } 9 & \text{---} & 5 & \text{---} & m. \\
 & & & & 6 \text{ comes } 3^1 \\
 & & & & 8 \\
 d. & & d. & & d. & & 11\frac{1}{3} \\
 \text{If } 8 & \text{---} & 11\frac{1}{3} & \text{---} & 12 & \text{Answ.} & 17d.
 \end{array}$$

23. I and he barter our Goods, mine cost 8*d.* per *lb.* but charge it at 13*d.* and give 9 Months Time, he charges his at 17*d.* and gives 6 Months Time ; tell me how much his Goods cost ? *Answ.* 12*d.*

24. Two Persons barter, A has Sugar at 8*d.* per *lb.* but charges it 13*d.* and gives 9 Months, B has Cocoa at 12*d.* per *lb.* charges it 17*d.* per *lb.* I demand how much Time B must give to make the Barter equal ? *Answ.* 6 Months.

25. A and B barter, A has Goods which cost 15*s.* which he charges at 20*s.* giving 6 Months Time, B has Goods which cost 17*l.* 10*s.* and charges them at 21*l.* 5*s.* I demand what Time he must give to make an equal Barter ? *Answ.* 9 Months.

C H A P.

2. A and B have gained, by Merchandizing, 182*l*. A put in 300*l*. and B 400*l*. I demand each their Share of the Profits? *Answ.* A 78*l*. and B 104*l*.

3. Two Persons are to share 100*l*. of which, A is to have $\frac{1}{2}$, and B the $\frac{1}{4}$ Part. I demand what each justly ought to have? *Answ.* A 66 $\frac{2}{3}$ *l*. and B 33 $\frac{1}{3}$ *l*.

4. A Merchant being deceased, 'tis found he owes to A 500*l*. and to B 900*l*. though he left but 1100*l*. behind him. I demand how much each is to have in Proportion to his Debt? *Answ.* A 392 $\frac{6}{7}$ *l*. B 707 $\frac{1}{7}$ *l*.

5. B and C are left a Legacy of 120*l*. of which B is to have $\frac{2}{3}$ and C the $\frac{1}{3}$, now tell me how much each is to have according to his Share in the said 120*l*.? *Answ.* B 80*l*. and C 40*l*.

6. Three Merchants load a Ship with Corn, A puts in 200 Barrels, B 300, and C 400 Barrels; at Sea, the Master is obliged by Storm, to heave 180 Barrels over Board, tell me how much each Merchant ought to lose for his Share? *Answ.* A 40, B 60, and C 80 Barrels.

7. Two Cities, Cork and Dublin, Distance suppose 100 Miles, A sets out from Dublin towards Cork, B sets out from Cork towards Dublin, A goes 12 Miles a Day, and B 8 Miles a Day. I demand how many Miles each has travelled when they meet? *Answ.* A 60, and B 40 Miles.

8. Two Merchants have gained 450*l*. of which A is to have 3 Times as much as B, tell me how much is each to have? *Answ.* A 337*l*. 10*s*. and B 112*l*. 10*s*.

Example.

Example.

A	3				
B	1				
If 4	—	450	<	3 comes	337 : 10
			<	1 comes	112 : 10

9. Three Persons have to Share 600*l*. A is to have a certain Sum, B as much again as A, and C three Times as much as B. I demand each Man's Part ? *Ans*w. A $66\frac{6}{9}$, B $133\frac{3}{9}$ and C 400*l*.

10. Three Persons are to pay a Tax of 100*l*. according to their Estates; now A is found to be worth 800*l*. B 600*l*. and C 400*l* how much is each of them to pay ? *Ans*w. A $44\frac{8}{18}$ *l*. B $33\frac{6}{18}$ *l*. and C $22\frac{4}{18}$ *l*.

11. Three Persons have gained 1320*l*. now when A takes 6*l*. B takes 4*l*. and C 2*l*. I demand how much each gets ? *Ans*w. A 660*l*. B 440*l*. and C 220*l*.

12. A and B have gained 600*l*. whereof A takes 10 per Cent. more than B. I demand how much each receives ? *Ans*w. A $314\frac{6}{11}$ *l*. and B $285\frac{1}{11}$ *l*.

13. Three Persons are to divide a Legacy of 600*l*. A is to have $\frac{1}{2}$, B $\frac{1}{3}$, and C $\frac{1}{4}$. I demand each of their Shares ? *Ans*w. A $276\frac{1}{3}$ *l*. B $184\frac{2}{3}$ *l*. and C $138\frac{1}{3}$ *l*.

14. Three Merchants made a Company, A put in 150*l*. and B 260*l*. and they gained 65*l*. whereof C's Share came to 10*l*. I would know A and B's Part of the Gain, and how much C put in ? *Ans*w. C put in 169*l*. 6*s*. $11\frac{2}{3}$ *d*. A's Profit 16*l*. 16*s*. $7\frac{1}{4}$ *d*. B's Profit 29*l*. 3*s*. $4\frac{1}{2}$ *d*.

15. Three Persons join, A and B put in a certain Stock, and C put in 1090*l*. they gain 110*l*. whereof A took 35*l*. and B 29*l*. tell me how much A and B put in, and C's Share of the Gain? *Answ.* C Share of the Profit was 46*l*. A put in 829*l*. 6*s*. 11 $\frac{1}{23}$ *d*. B put in 687*l*. 3*s*. 5 $\frac{17}{23}$ *d*.



C H A P. XXVIII.

FELLOWSHIP with TIME.

S E C T. I.

THREE Merchants made a Company, A put in 30*l*. for 4 Months, B put in 20*l*. for 5 Months, C put in 15*l*. for 6 Months, and with this Stock they gain 31*l*. I demand each Man's Share of the Gain? *Answ.* A 12*l*. B 10*l*. and C 9*l*.

Rule.

Multiply each Man's Stock by its Time, and the Products add together, then say, as the whole Stock and Time is to the whole Loss or Gain, so is each Man's particular Stock and Time, to each Man's particular Loss or Gain.

Example.

A 30 <i>l</i> .	B 20 <i>l</i> .	C 15 <i>l</i> .
m. 4	m. 5	m. 6
120	100	90
100		
90		

310 ——— 31 $\left\{ \begin{array}{l} 120 \\ 100 \\ 90 \end{array} \right.$ *Answ.* $\left| \begin{array}{l} 12 \text{ for A} \\ 10 \text{ for B} \\ 9 \text{ for C} \end{array} \right.$

31
2. Two

2. Two Merchants made a Company, A put in 100*l.* for 4 Months, and B put in 136*l.* for 3 Months, and they gain 50*l.* I demand each Man's Share of the Profit? *Ans.* A 24*l.* 15*rs.* and B 25*l.* 4*rs.*

3. Three Grasers hired a Piece of Land for 60*l.* 10*s.* A put in 5 Oxen for 4½ Months, B put in 8 Oxen for 5 Months, and C put in 9 Oxen for 6½ Months. I demand how much each must pay? *Ans.* A 11*l.* 5*s.* B 20*l.* and C 29*l.* 5*s.*

4. Three Persons have received 665*l.* Interest. A had put in 4000*l.* for 12 Months, B 3000*l.* for 15 Months, and C 5000*l.* for 8 Months; how much is each Man's Part of the Interest? *Ans.* A 240*l.* B 225*l.* and C 200*l.*

5. Three Persons hired a Piece of Land for 12*l.* 10*s.* 6*d.* A put in 20 Sheep for 5 Days, B put in 16 Sheep for 7 Days, and C put in 25 Sheep for 4 Days. I demand how much each must pay? *Ans.* A 4*l.* 0*s.* 3⅓*d.* B 4*l.* 9*s.* 11⅓*d.* and C 4*l.* 0*s.* 3⅓*d.*

6. Three Merchants lost by some Dealings 45*l.* 10*s.* A's Stock was 100*l.* for 6½ Months, B's 100*l.* for 9½ Months, and C's 150*l.* for 8⅔ Months; what is each Man's Part of the Loss? *Ans.* A 10*l.* 3⅔*s.* B 14*l.* 18⅓*s.* and C 20*l.* 7⅔*s.*

7. Three Merchants put in a Stock, viz. A puts in the 1st of January 120*l.* until the 23d of March, B puts in 176*l.* the 10th of February until the 12th of April, C puts in 295*l.* the 2d of February, until the 25th of April, and they gain 800*l.* I want to know each Man's Part of the Gain, allowing 28 Days to the Month of February? *Ans.* A 174*l.* 3*s.* 4⅔⅔⅔*d.* B 192*l.* 7*s.* 6⅓⅓⅓*d.* C 433*l.* 9*s.* 1⅔⅔⅔*d.*

8. Four Persons hired a Boat for 19s. to go 24 Miles, but being come within 9 Miles of the Place where they intended to go, there came 2 Persons who desired to come into the Boat, with Condition to pay proportionably; tell me how much each of them is to pay? *Answ.* The 4 first Persons 16s. and the 2 last 3s.

9. Four Persons hired a Coach to go 50 Miles for 40s. now when they were gone 20 Miles they met two Persons who desired to come in the Coach, with Condition, to pay proportionably; how much is each of them to pay? *Answ.* The 4 first Persons 1l. 10s. 9 $\frac{2}{3}$ d. and the 2 last 0l. 9s. 2 $\frac{1}{3}$ d.



C H A P. XXIX.

Loss and GAIN.

S E C T. I.

BOUGHT a Piece of Cloth, 53 Yards long, at 12s. the Yard, sold the same at 14s. the Yard, what is the Profit on the whole Piece?
Answ. 5l. 6s.

Example.

s. 14 sold

s. 12 bought

$$\begin{array}{r}
 2 \\
 53 \\
 \hline
 106 \\
 \hline
 \text{£. } 5 : 6
 \end{array}$$

2. If

2. If 1 lb. of Pepper cost 15d. and sold for 17d. what is the Profit upon 3 Bales, weight 980 lb. ?
Ans. 8l. 3s. 4d.

3. Bought a Piece of Cloth 53 Yards long, for 31l. 16s. and sold it at 14s. the Yard. I demand what is gained by the whole Piece ? *Ans.* 5l. 6s.

14. If 980 lb. of Merchandizes are bought for 61l. 5s. and sold for 69l. 8s. 4d. I demand the Profit upon each lb. ? *Ans.* 2d.

5. Bought 12 Hhds. of Wine, at 10l. 5s. the Hhd. paid for Cellarage and other Charges 4s. 6d. per Hhd. sold the Hhd. for 37 Crowns, each at 5s. 5d. I demand Profit or Loss ? *Ans.* 5l. 9s. Loss.

6. A Merchant buys 100 Casks of Butter, wt. neat, 210 Ct. 2 qrs. 14 lb. at 20s. per Ct. pays for sundry Charges 1l. 5s. I demand his Profit if he sells the Butter at 21s. 9d. per Ct. ? *Ans.* 17l. 3s. 7½d.

— II. —

7. If 1 Tun of Tallow cost 20l. and is sold for 22l. 10s. I demand how much is the Profit per Ct. ? *Ans.* 12½.

Example.

$$\begin{array}{rcl}
 & 22\frac{1}{2} & \\
 & 20 & \\
 \hline
 l. & & l. \\
 20 & \text{---} & 2\frac{1}{2} \text{ ---} 100 \text{ } \textit{Ans. } 12\frac{1}{2}
 \end{array}$$

8. If I buy 1 lb. of Cloves for 6s. 3d. and sell it for 6s. how much per Ct. Loss is it ? *Ans.* 4 per Cent.

9. Bought

9. Bought 1000 Barrels of Wheat, at 10s. per Barrel, paid for divers Charges 10l. how much per Cent. is gained if the Wheat is sold at $11\frac{1}{4}s.$ per Barrel? *Ans.* $10\frac{5}{7}$ per Cent.

10. Sold certain Merchandizes for 520l. and find to have made 120l. Profit. I demand how much per Cent. it is? *Ans.* 30l.

11. If 1 lb. of Pepper is sold for $10\frac{1}{2}d.$ and there is lost 2d. per lb. how much is the Loss per Ct.? *Ans.* 16 per Ct.

12. When I sell 1 lb. of Silk for 26s. and 6d. I gain 2s. 6d. now, I want to know how much I should gain if I sold a Bale of Silk which cost 120l.? *Ans.* 12l. 10s.

— III. —

13. Bought 100 Oranges at the Rate or 6 for 4 $\frac{1}{2}d.$ and sold them at the Rate of 5 for 3d. tell me how much Money is lost, and how much is the Loss per Ct.? *Ans.* Lost 15d. or 20 per Ct.?

Example.

Oran.	d.	Oran.	d.
If 6 —	$4\frac{1}{2}$ —	100 comes	75 bought
If 5 —	3 —	100 comes	60 sold
			<u>15 lost</u>

d.	lost	d.
75 —	15 —	100 <i>Ans.</i> 20 per Cent.

14. If 5 Lemons are bought for 4d. and 4 Lemons are sold for 5d. how much is the Profit upon the Box containing 200 Lemons, and how much is it per Ct.? *Ans.* 7s. 6d. is $56\frac{1}{4}$ per Cent.

15. Suppose

15. Suppose 6 Yards of Ribbon cost 28*d.* and are sold at 5½*d.* the Yard, what is the Profit, at that Rate, upon a Piece of 54 Yards? *Ans*w. 2*s.* 7½*d.*

16. Bought Coffee at the Rate of 21*s.* for 7*lb.* sold it at 3*s.* 4*d.* the *lb.* how much is the Profit, at that Rate, upon a Bale, wt. 346*lb.* and how much do I gain per Ct.? *Ans*w. 11½ per Cent. or 5*l.* 15*s.* 4*d.*

— IV. —

17. A Piece of Serge 53 Yards long, cost 5*l.* 1*s.* 7*d.* for how much must one Yard be sold to gain by the whole Piece 1*l.* 2*s.* 1*d.*? *Ans*w. At 28*d.*

Example.

<i>l.</i>	<i>s.</i>	<i>d.</i>
5	1	7
1	2	1

*yd*s. ————— *yd.*

If 53—6 : 3 : 8—1 *Ans*w. 28*d.*

18. If 1 Yard of Serge cost 23*d.* for how much must a Piece, containing 53 Yards, be sold to gain 5*d.* a Yard? *Ans*w. For 6*l.* 3*s.* 8*d.*

19. How much would the former Piece of Serge come to, if it was sold at 3*d.* per Yard Loss? *Ans*w. 4*l.* 8*s.* 4*d.*

20. If 112*lb.* of Sugar cost 2*l.* 15*s.* and are sold for 2½*d.* per *lb.* Profit, how much must be received for the 112*lb.*? *Ans*w. 3*l.* 18*s.* 4*d.*

21. Suppose the above Sugar was sold for ¾*d.* per *lb.* Loss, how much will then be received? *Ans*w. 2*l.* 8*s.*

22. If

22. If 1 lb. of Pepper cost 15*d.* for how much must 1 lb. be sold to gain upon 30lb. as much as 5lb. cost? *Ans.* 17½*d.*

— V. —

23. If 1 Tun of Wine cost 40*l.* for how much must it be sold to gain 6¼ per Cent.? *Ans.* 42*l.* 10*s.*

Example.

100							
6¼							
If 100	—	106¼	—	40 comes	42	:	10

Or thus,

					l.	s.	
If 100	—	6¼	—	40 comes	2	:	10
					40	:	00

Ans. 42 : 10

24. At what Rate must I sell 1 Ct. wt. of Madder, which cost 3*l.* 15*s.* to gain 10 per Cent.? *Ans.* 4*l.* 2*s.* 6*d.*

25. At what Rate must the aforesaid Madder be sold to lose 10 per Cent.? *Ans.* 3*l.* 7*s.* 6*d.*

26. Bought 12 Pieces of white Cloth, for 6*l.* 10*s.* per Piece, paid 20*s.* 10*d.* per Piece, for dying; for how much must I sell then a Piece to gain 20 per Cent.? *Ans.* 9*l.* 1*s.*

27. For how much must I sell the aforesaid Cloth a Piece, if I had a Mind to gain upon 12 Pieces 100 Crowns of 5*s.* 5*d.* each? *Ans.* 9*l.* 15*s.* 11⅔*d.*

28. Suppose 900lb. of any Thing, cost 67*l.* 10*s.* at what Rate must it be sold per lb. to gain 2*d.* per lb.? *Ans.* 20*d.*

— VI. —

29. Bought 1 Tun of Wine, for 50*l.* ready Money, sold it for 54*l.* 10*s.* payable in 8 Months Time, I demand how much per Cent. I gain at that Rate per Annum ? *Ans*w. $13\frac{1}{2}$ per Cent.

Example.

$$\begin{array}{r} 54\frac{1}{2} \\ \text{£. } 50 \\ \hline \end{array}$$

$$\begin{array}{ccc} 50 & & 100 \\ 8 & \triangleright 4\frac{1}{2} < & 12 \end{array}$$

400

1200 *Ans*w. $13\frac{1}{2}$ per Ct.

30. Suppose I bought Rice for 3*l.* 15*s.* ready Money, and sold it for 4*l.* 6*s.* 3*d.* payable in 18 Months, how much per Cent. do I gain at that Rate per Annum ? *Ans*w. 10 per Cent.

31. If 1 Tun of Tallow is bought for 23*l.* 6*s.* 8*d.* ready Money, and sold for 24*l.* 10*s.* payable in 9 Months, tell me how much is the Profit per Ct. in 12 Months ? *Ans*w. $6\frac{2}{3}$ per Ct.

32. What is the Profit per Ct. in 12 Months upon 300*lb.* of Coffee, which cost 4*s.* 2*d.* the *lb.* ready Money, and sold for 5*s.* per *lb.* payable in 8 Months ? *Ans*w. 30 per Cent.

33. A Linen Draper buys 20 Pieces of Linen, each containing 45 Yards, at 60*s.* per Piece for ready Money, sells them at 16*d.* per Yard, payable in 6 Months, how much is his Profit or Loss ? *Ans*w. He loses the Use of his Money for 6 Months.

— VII. —

34. Bought 100 Casks of Raisins at 50*s.* per Ct. payable in 9 Months, sold them for 52*s.* per Ct. payable

Loss and Gain.

Example.

d. a. l. s.
12-13-706: 5

	<i>l.</i>	<i>s.</i>	<i>d.</i>
comes	765	: 2	: 1
Charges	10	: 6	: 8

The whole Cost 775 : 8 : 9
100 — 15 — 775 : 8 : 9 comes 116 : 6 : 3 $\frac{3}{4}$

£. 891 : 15 : 0 $\frac{3}{4}$

lb. l. s. d. lb.

11300—981:15:0 $\frac{3}{4}$ —1 Answ. 184 $\frac{2483}{5200}$ d.

39. A Merchant receives from *Lisbon* 180 Casks of Raisins, which stand him here in 16*s.* each, trucks them against other Merchandizes at 28*s.* per *Ct.* finds to have made 25 per *Ct.* Profit. I demand the Weight of each Cask one with another?
Ans. 80*lb.*

40. I sell Barley at 6s. per Kilderkin, and gain 20 per Ct. now if I sell a Parcel of the same Barley amounting to 3l. 15s. and find to gain 50 per Ct. tell me how many Barrels were in the last Parcel?

Ans. 10——— And at what Rate I sold them ?

*Ans*w. At $7\frac{1}{2}s$.

41. Received 3 Pieces of Holland, qt. No. 1, 42 Ells, at $15\frac{1}{4}$ Stivers the Ell, No. 2, 52 Ells, at $19\frac{3}{8}$ Stivers the Ell. No. 3, $64\frac{1}{2}$ Ells, at $20\frac{1}{2}$ Stivers the Ell. At how much must I sell it a Yard, one with another, to gain 20 per Ct. allowing $10\frac{1}{2}$ Stivers for 1s. Sterling, 3 Yards make 4 Ells.

Ans. 2s. $10\frac{2962}{11095}d.$

— IX. —

42. A Merchant sends to Barbadoes 300 Firkins
of Butter, weight 175 *Ct.* 2*qrs.* 19*lb.* at 18*s.* 8*d.*
per *Ct.* pays for Duty and other Charges 11*l.* 0*s.*
S 10*d.*

10d. his Correspondent at Barbadoes sells the Butter at 6d. per lb. (wt. as above) pays for Freight, &c. 24l. 17s. 1d. takes 5 per Cent. for his Commission. I demand Loss or Gain, if 135l. Barbadoes are worth but 100l. in Ireland? *Answ.* 152l. 14s. 5½d. Profit.

Example.

Ct.	qrs.	lb.		l.	s.	d.
175	: 2	: 19	at 18s. 8d per Ct.	163	: 19	: 2
			Charges—	11	: 00	: 10

First Cost—175 : 00 : 00

Ct.	qrs.	lb.		l.	s.	d.
175	: 2	: 19	at 6d. the lb.	491	: 17	: 6

Charges—24 : 17 : 1

Commission 24 : 11 : 10½

£. 49 : 8 : 11½

The neat Proceeds 442 : 8 : 6½

If 135—100—442 : 8 : 6½ comes 327 : 14 : 5½

The first Cost 175 : 00 : 00

Profit 152 : 14 : 5½

43. Sent to Rotterdam 500 Salt Ox-hides, weight neat 400 Ct. 2 qrs. 14 lb. cost 20s. 4d. per Ct. paid for Duty and other Charges 15l. 10s. 3d. when the Hides arrived they weighed 39370 lb. and my Correspondent sells them for 15 Guilders the 100 lb. deducts for Freight and other Charges 650 Guilders 17½ Stivers, and for his Commission 2 per Cent. Now tell me whether I gain or lose, if I value each Gilder at 2s. ? *Answ.* I gain 90l. 16s. 8½d.

44. A Merchant sends to Bourdeaux 200 Barrels of Beef, which cost him 20s. per Barrel, and 400 Casks of Butter, wt. neat 600 Ct. 2 qrs. 0 lb. at

at 20s. 4d. per Ct. pays for Duty and other Charges 45*l.* 10s. 6d. the Correspondent in Bourdeaux sells the Beef for 16 Livres the Barrel, and the Butter for 20 Livres, the 100*lb.* (wt. 67850) deducts for Charges 1500 Livres, and 2 per Cent. for his Commission, now if the Merchant values each Livre at 16d. to know whether he gains or loses? *Ans.* He gains 139*l.* 12s. 1*½*d.

45. A Merchant in Ireland sent to Lisbon 500 Barrels of Wheat, cost 10*½*s. per Barrel, 200 Firkins of Butter, wt. 110*Ct.* 2*qrs.* 14*lb.* at 18s. 8d. per Ct. and 400 tann'd Hides, weight 106*Ct.* 3*qrs.* at 5*¾*d. per *lb.* paid for Duty and other Charges 35*l.* 16s. 1d. and pays Præmium of Insurance of 688*l.* at 16 per Ct. the Wheat at Lisbon measured 5000 Alquires, and is sold at 300 Res the Alquite, the Butter wt. 387 Arobes * and 6*lb.* and is sold at 80 Res the *lb.* — The Leather wt. 373 Arobes and 20*lb.* and sells for 150 Res the *lb.* the Factor pays for Duty and other Charges 832*£*, 062 Res, and charges for his Commission 3 per Cent. The Factor remits the neat Proceeds to London, at 5s. 6d. per Milre, and the Merchant, in Ireland, draws it from London, at 5 per Ct. advance: I demand whether he gains or loses by his Cargo? *Ans.* He gains 16*l.* 14s. 6d.

46. A Merchant in Ireland, sends to Ostend 20 Hhds. of Tallow, wt. 10 Tuns, 17*Ct.* 3*qrs.* at 30*l.* 10s. 9d. the Tun, pays for Duty and other Charges, 25*l.* 10s. and for Præmium of Insurance 55*l.* 10s. the Tallow arriving at Ostend, wt. 24388*lb.* and the Merchant there sells it at 18 Guilders the 100*lb.* pays for Freight, Duty and other Charges 595 Guilders, 10 Stivers, 4 Pennings, and charges for his Commission 2 per Ct. and remits the neat

S 2

Proceeds

* Note every Arobe is 32*lb.*

Proceeds to London, at 33s. 9d. Flemish, per l. Sterling, and the Irish Merchant draws it from London, at 4 per Ct. advance: I would know whether he gains or loses? *Ans.* He loses 32l. 15s. 1⁸⁶⁶⁴²⁹/₁₃₅₀₀₀₀d.



C H A P. XXX.

REBATE OR DISCOUNT.

S E C T. I.

WHEN Merchants sell their Commodities upon Time, and afterwards both Parties do agree that this Money shall be paid in, before it be due, allowing at the Rate of a certain Interest, per Annum, this Allowance is called Rebate or Discount, and the Money so paid or received, before due, being put out to Use (at the Rate of the Discount agreed on until the Time it was due) must amount to the just Sum that would be then due.

1. A Merchant buys certain Merchandizes, to the Value of 648l. payable in 12 Months, I would know how much ready Money he is to pay, the Rebate at 8 per Ct. per Annum? *Ans.* 600l.

Example.

l. 100			
8			
—	l.	l.	l.
If l. 108	— 100	— 648	<i>Ans.</i> 600 ready Money.
			48 Rebate
		—	
		648 l.	

2. How

2. How much is the Rebate of 7080*l.* 15*s.* in 12 Months, at 8 per Ct. per Annum? *Answ.* 524*l.* 10*s.*

3. How much is the Rebate of 100*l.* for 12 Months, at 8 per Ct. per Annum? *Answ.* 7*l.* 8*s.* 17*d.*

4. I demand how much ready Money I must pay for 432*l.* 14*s.* for 12 Months, Rebate at 7 per Ct. per Annum? *Answ.* 404*l.* 7*s.* 10²²₁₀₇*d.*

5. What is the Rebate of 45*l.* 15*s.* 6*d.* for 12 Months, at 6 per Ct. per Annum? *Answ.* 2*l.* 11*s.* 9⁴₃₃*d.*

— II. —

6. How much is the Rebate of 530*l.* in 9 Months, at 8 per Ct. per Annum? *Answ.* 30*l.*

Example.

<i>m.</i>	<i>p.Ct.</i>	<i>m.</i>
If 12	— 8 —	9 comes 6
		100

If 106—6—530 *Answ.* 30*l.*

7. How much is the Rebate of 308*l.* 15*s.* in 18 Months, at 8 per Ct. per Annum? *Answ.* 33*l.* 1*s.* 7²₇*d.*

8. Tell me the Rebate of 112*l.* 12*s.* in 20 Months, at 7 per Cent. per Annum? *Answ.* 11*l.* 15*s.* 3²⁷₆₇*d.*

9. One is indebted 273*l.* 10*s.* payable in 21 Months, I demand how much ready Money he is to pay, the Rebate at 6 per Cent. per Annum? *Answ.* 247*l.* 10*s.* 2¹⁵⁸₂₁₁*d.*

S 3

10. Some

10. Some Merchandizes being bought for 5150*l.* with $4\frac{1}{2}$ Months Rebate, at 8 per Ct. per Annum, besides 1 per Ct. for prompt Payment, I would know much ready Money it comes to ? *Answ.* 4950*l.*

— III. —

11. A is indebted to B 432*l.* payable in 12 Months, more 580*l.* payable in 2 Years ; now if A has a Mind to pay both those Sums immediately, the Rebate at 8 per Ct. per Annum, how much must he pay ? *Answ.* 900*l.*

Example.

In 1 Year *l.* *l.*

If 108 — 100 — 432 comes 400*l.*

In 2 Years

If 116 — 100 — 580 comes 500*l.*

Answ. 900*l.*

12. What is the Rebate of 756*l.* the one half payable in 6 Months, and the other half in 6 Months after that, at 7 per Ct. per Annum ? *Answ.* 37*l.* 10*s.* $2\frac{1}{2}\frac{2}{4}\frac{18}{61}$ *d.*

13. How much ready Money must one pay for 1000*l.* of which 300*l.* are payable in 1 Year, 300*l.* in 2 Years, and the Rest in 3 Years, discounting 8 per Ct. per Annum ? *Answ.* $858\frac{2}{3}\frac{37}{4}\frac{66}{3}$ *l.*

14. A owes B 2000*l.* of which 690*l.* are to be paid in 15 Months, 350*l.* in 18 Months, 710*l.* in 21 Months, and the Remainder in 24 Months. I demand how much ready Money he must pay, rebating 8 per Ct. per Annum ? *Answ.* *l.* 1778 $\frac{3}{4}\frac{3}{4}\frac{27}{6}$ or 1778*l.* 1*s.* 11 $\frac{1}{8}\frac{1}{8}\frac{1}{83}$ *d.*

— IV. —

15. A Merchant is indebted 2163*l.* 3*s.* payable in 12 Months. I demand how much he must pay, if he pays it at the Expiration of 5 Months, discounting at the Rate of 6 per Ct. per Annum?
Answ. 2090*l.*

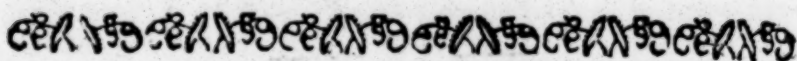
Example.

$$\begin{array}{r}
 m. \\
 12 \\
 5 \\
 m. \quad \text{—} \\
 \text{If } 12-6-7 \text{ comes } 3\frac{1}{2} \\
 \quad \quad \quad 100 \\
 \hline
 \text{If } 103\frac{1}{2} \text{ — } 100 \text{ — } 2163 : 3 \\
 \hline
 \text{Answ. } 2090*l.*
 \end{array}$$

16. If the aforesaid Sum was paid in 3 Months, how much ought he then to pay Rebate, as before?
Answ. 2070*l.*

17. A Merchant owes 110*l.* payable in 20 Months, and 224*l.* payable in 24 Months, the first Sum he pays in 5 Months, and the other one Month after that, discounting 8 per Ct. per Annum. I demand the Sum he paid? *Answ.* 300*l.*

18. A is to pay the 7th of April, 1719, 5927*l.* and the 19th of June afterwards 5989*l.* how much is he to pay if he pays both these Sums the 24th of January, 1719, discounting at the Rate of 16 per Ct. per Annum? *Answ.* 11371*l.* 19*s.* 6 $\frac{1}{3}$ 2 $\frac{2}{3}$ 4*d.*



C H A P. XXXI.

ALLIGATION MEDIAL.

S E C T. I.

ALLIGATION MEDIAL teaches how to find a Mean in the Price, Quantity, or Quality, relating to the Mixture of Merchandizes, as Corn, Wine, Metals, Medicines, &c. one with another.

1. A Goldsmith has 18*lb.* of Silver Bullion, of 8 Ounces fine, melts that with 24*lb.* of Bullion of 10 Ounces fine. I demand how fine each *lb.* of the Mixture is? *Ans.* 9 $\frac{1}{2}$ Ounces.

Rule.

As the Sum of all the Quantities is to the Sum of their Rates, so is any Part of the Mixture to the mean Rate, or Price.

Example.

lb.	oz.	oz.	
18 of	8	144	
24 of	10	240	
—	—	—	lb.
If 42	—	384	— 1 <i>Ans.</i> 9 $\frac{1}{2}$ oz.

2. There are melted and mixed together, two Sorts of Silver, one Sort is worth 5*s.* and the other 4*s.* an Ounce, and there were 4 Ounces of the first, and 8 Ounces of the latter, what is the Value of one Ounce of this Mixture? *Ans.* 4*s.* 4*d.*

3. Suppose 100*lb.* of Tobacco of 10 $\frac{1}{2}$ *d.* the *lb.* and 80*lb.* of 9*d.* the *lb.* and 60*lb.* of 9 $\frac{1}{2}$ *d.* the *lb.* are

are mixed together. I demand what 1*lb.* of this Mixture is worth? *Ans.* $9\frac{3}{4}d.$

4. A Druggist has 200*lb.* of Ginger at 6*d.* the *lb.* 300*lb.* of 7*d.* the *lb.* and 400*lb.* of 8*d.* the *lb.* now if he mixes them together, what will 1*lb.* cost? *Ans.* $7\frac{2}{3}d.$

5. 100 Casks of Butter, qt. 200*Ct.* 3*qrs.* 14*lb.* at 18*s.* 8*d.* per *Ct.* are mixed with 150 Casks, qt. 306*Ct.* 1*qr.* 7*lb.* at 23*s.* per *Ct.* and with 200 Casks, qt. 420*Ct.* 3*qrs.* at 23*s.* 4*d.* per *Ct.* I demand what 1*Ct.* of said Butter stands in? *Ans.* $23s. 10\frac{11}{30}d.$

6. A Goldsmith melts 8*lb.* $5\frac{1}{2}$ Ounces of Gold Bullion of 14 Carats fine, with 12*lb.* $8\frac{1}{2}$ Ounces of 18 Carats fine. I demand how many Carats fine this Mixture is worth *Ans.* $16\frac{5}{12}$ Carats.

7. A Refiner has 10*lb.* of Gold, of 20 Carats fine, melts it with 16*lb.* of 18 Carats fine, the Question is, how much Alloy must be put to it to make it 22 Carats fine? *Ans.* 'Tis not fine enough by $3\frac{2}{3}$ Carats, so no Alloy must be put to it, but more Gold.



C H A P. XXXII.

ALLIGATION ALTERNATE.

S E C T. I.

ALLIGATION ALTERNATE shews the due Proportion of Ingredients in any Mixture when the particular Rates of the Ingredients and mean Rates are given being (as it were) the Converse to Alligation Medial, and admits of three Cases.

Case

Case, 1. The particular Rates of any Ingredients proposed to be mixed, and the Mean Rate of the whole Mixture being given, to find how much of each Ingredient is requisite to compose the Mixture, when the whole Quantity, or any Part thereof is not limited.

1. How much Wheat at 6s. the Bushel, and Barley at 3s. 8d. the Bushel, will make a Mixture that may stand in 4s. 4d. the Bushel? *Answ.* 8 Bushels of Wheat, and 20 Bushels of Barley.

Rule, Take the Differences between the Mean Rate, and the particular Rates, and set them down alternately, and they will be the Quantity required.

	Extre.	Pri.	Alt. diff.	Proof
d.			72	8 Bush. at 72d. is 576
Mean Pri. 52	<	d.	44	20 Bush. at 44d. is 880
				28 Bush. at 52d. is 1456

NOTE, *The Question in this, and all the other Sections, except the 4th and 7th, admit of more Answers than one, and yet all true; for although in the foregoing Question, 8 and 20 do answer it, yet there are many other Numbers that are in Proportion to one another, as 8 to 20, that will answer the Question; and tho' common Arithmetic will not obtain all the possible Answers which the Questions in those Sections are capable of, nor often those which best suit the Purpose: yet by an algebraic Way of Reasoning may be obtain. all the possible Answers to any Question in this Rule.*

2. How much Tobacco of $7\frac{1}{2}d.$ the lb. and $9\frac{3}{4}d.$ the lb. must be mixt, so that it will stand in $8\frac{1}{2}d.$ the lb.? *Answ.* $1\frac{1}{4}lb.$ at $7\frac{1}{2}d.$ and 1lb. at $9\frac{3}{4}d.$

3. What

3. What Quantity of Sugar, at 11*d.* the *lb.* and 7½*d.* the *lb.* would make a Mixture, so that it would stand in 10¼*d.* the *lb.*? *Ans.* 3*lb.* at 11*d.* and ¾*lb.* at 7½*d.*

4. How many *oz.* of Silver of 11 *oz.* fine and 8 *oz.* fine, must be melted together to make the Mass or Mixture 9 *oz.* fine? *Ans.* 1 *oz.* of 11 *oz.* fine, and 2 *oz.* of 8 *oz.* fine.

— II. —

5. A Merchant has Sugar of 5*d.* 10*d.* and 12*d.* the *lb.* how much of each Sort must he take that he may sell a *lb.* for 8*d.*

Rule.

Join the single Extreme to all the other Extremes, and proceed as before.

	<i>Ans.</i>	<i>Proof.</i>
8 < 5	4 and 2 is 6 at 5 <i>d.</i>	30 <i>d.</i>
10	3 at 10 <i>d.</i>	30 <i>d.</i>
12	3 at 12 <i>d.</i>	36 <i>d.</i>
	<i>lb.</i> 12 at 8 <i>d.</i>	96

6. How much Sack of 6*s.* the Gallon, and white Wine of 4*s.* the Gallon, and Sherry of 4*s.* 9*d.* the Gallon, would be wanted to make a Mixture, so that a Gallon may stand in 4*s.* 6*d.*? *Ans.* 6 Gallons at 6*s.* and 6 Gallons at 4*s.* 9*d.* and 21 Gallons at 4*s.*

7. A Merchant has Wheat of 5*s.* 10*d.* the Bushel, and Barley of 4*s.* 2*d.* the Bushel, and Rye of 3*s.* the Bushel, how many Bushels of each Sort must

must he take to make a Mixture, so that the Bushel may stand in 5s. 5d. ? *Ans*w. 44 at 5s. 10d. 5 at 4s. 2d. and 5 at 3s.

8. A Vintner has Brandies at 3, 5 and 6s. the Gallon, and has a Mind to mix a Quantity of them together, so that it may stand him in 5s. 6d. the Gallon ; I demand how many Gallons he must take of each Sort ? *Ans*w. $\frac{1}{2}$ at 3s. $\frac{1}{2}$ at 5s. and 3 at 6s.

— III. —

9. A Grocer had Sugar of 5d. 7d. 12d. and 13d. the lb. and mixt of each a certain Quantity together, and found it stood him in 10d. the lb. I demand how many lb. he took of each Sort ? *Ans*w. 3lb. of 5d. 2lb. of 7d. 3lb. of 12d. and 5lb. of 13d. or otherwise.

Rule.

Join two Extremes together, no Matter which, so that one be larger than the Mean, and the other less, and set their Differences down, as before.

Example.

		Proof.		
		l.	s.	d.
10	5	Answ. 3lb. of 5d. is	0	1
	7		0	1
	12		0	3
	13		0	5
		13lb. at 10d. is £. 0 : 10 : 10		

Or

or Quantity to be mixt, which is here 12, because a Pound or 12 oz. of Silver being tried a certain Time in the Fire, losing nothing in its Weight, is esteemed 12 oz. fine, but if it loses 3 oz. 'tis called 9 oz. fine, and if it loses 2 oz. it is called 10 oz. fine, &c.

Rule.

As the Difference standing against the Quantity given, is to the Quantity or Mixture given, so is any other Difference to the Quantity sought.

Example.

Note the (O) stands here for Alloy.

$$\begin{array}{r} 7 \text{ } \swarrow \text{ } ^{\text{O}} \\ 9 \end{array} \bigg| \begin{array}{r} 2 \\ 7-12-2 \end{array} \text{ Answ. } 3\frac{3}{7}.$$

Proof.

Silver 9 oz.

Alloy 3 oz.

$$\begin{array}{r} 12 \\ \text{Alloy added } 3\frac{3}{7} \\ \hline \end{array}$$

If 15^3-9-12 comes 7 oz.

13. How much Alloy must be put to Bullion of $10\frac{1}{2}$ oz. fine, to bring it to $7\frac{1}{4}$ oz. fine? Answ. $5\frac{1}{4}\frac{2}{3}$ oz.

14. How much Alloy must be put to Gold of $21\frac{1}{2}$ Carats to bring it to $17\frac{1}{2}$ Carats fine? Answ. $5\frac{3}{5}$ Carats.

Note, An Ounce of Gold being tried in the Fire, losing nothing in Weight is called 24 Carat. fine, but if it loses 3 Carats, 'tis called 21 Carats fine, and if it loses 4, 'tis called 20 Carats fine, &c.

15. How much Water must I mix with 63 Gallons of Brandy of 5*s.* 5*d.* the Gallon, so that it may stand in 4*s.* 6*d.* the Gallon? *Answ.* 12½ Gallons.

16. How much Wheat of 6*s.* the Bushel must be mixed with 12 Bushels of Barley, of 3*s.* 8*d.* the Bushel, so that the whole Mixture may stand in 4*s.* 4*d.* the Bushel? *Answ.* 4½ Bushels.

— V. —

17. How much Brass of 14*d.* and Pewter of 10½*d.* the *lb.* must I melt with 50*l.* of Copper worth 16*d.* the *lb.* so that the whole Mixture may stand in 1*s.* the *lb.*? *Answ.* 200*lb.* at 10½*d.* and 50*lb.* at 14*d.*

$$\begin{array}{rcl}
 12 \left\{ \begin{array}{l} 10\frac{1}{2} \\ 14 \\ 16 \end{array} \right. & \begin{array}{l} - - 6 \\ - - 1\frac{1}{2} \\ - - 1\frac{1}{2} \end{array} & \begin{array}{l} \text{Proof.} \\ 50 \end{array} & \begin{array}{l} \text{Answ.} \\ 6 \\ 1\frac{1}{2} \end{array} \\
 \text{lb.} & & & \left| \begin{array}{l} 200 \text{ at } 10\frac{1}{2}d. \\ 50 \text{ at } 14d. \end{array} \right.
 \end{array}$$

200 at 10½*d.* is - 2100

50 at 14*d.* is - - 700

30 at 16*d.* is - - - 800

————— *lb.*

If 300 ————— 3600 ————— 1 comes 12*d.*

18. How much Gold of 21 and 23 Caracts fine must be mixed with 30 oz. of 20 Caracts fine to bring it to 22 Caracts fine? *Answ.* 30 of 21, and 90 of 23.

19. With 60 Gallons of Brandy at 6*s.* the Gallon, I mixed Brandy of 5*s.* 4*d.* the Gallon, and some Water, then I found it stood me in 3*s.* 6*d.* the Gallon, I demand how much Brandy, and how much Water I took? *Answ.* 60 Gallons at 5*s.* 4*d.* and 74¾ Gall. Water.

— VI. —

20. How much Malaga of 7*s.* 5*d.* the Gallon, and Sherry of 5*s.* 2*d.* the Gallon, and White Wine at 4*s.* 2*d.* the Gallon, must be mixed with 20 Gallons of Canary at 6*s.* 8*d.* the Gallon, so that one Gallon of the Mixture may stand in 6*s.* the Gallon? *Answ.* 44 Gall. at 7*s.* 5*d.* 16 Gall. at 5*s.* 2*d.* and 34 Gall. at 4*s.* 2*d.*

Example

$$\begin{array}{rcl}
 72 \left\{ \begin{array}{l} 89 \\ 62 \\ 50 \\ 80 \end{array} \right\} & \begin{array}{l} - - 22 \\ - - 8 \\ - - 17 \\ - - 10 \end{array} & \begin{array}{l} 20 \\ 22 \\ 8 \\ 17 \end{array} \left\{ \begin{array}{l} 22 \\ 8 \\ 17 \end{array} \right\} \text{Answ.} \left\{ \begin{array}{l} 44 \\ 16 \\ 34 \end{array} \right\} \text{Gal.}
 \end{array}$$

Proof.

44 at 89*d.* is 3916
 16 at 62*d.* is 992
 34 at 50*d.* is 1700
 20 at 80*d.* is 1600

If $\frac{22}{89} + \frac{8}{62} + \frac{17}{50} + \frac{10}{80} = 1$ comes 72.

21. How much Alloy, and how much Gold of 21 and 23 Caracts fine, must be put to 30 oz. of 20 Caracts fine, to bring it to 18 Caracts fine? *Answ.* 16½ oz. Alloy, 30 oz. of 21, and 30 oz. of 23 Caracts fine.

22. How do you prove the above *Answer* to be right? *Answ.* Thus,

oz.				
16 $\frac{2}{3}$	Alloy	Car.		
30	of 21 is	- - -	630	
30	of 23 is	- - -	690	
30	of 20 is	- - -	600	
			Car.	fine
If 106 $\frac{2}{3}$		1920		I comes 18

23. How much Lead of 2 $\frac{1}{2}d$. the *lb*. Pewter of 10*d*. the *lb*. and Brass of 16*d*. the *lb*. must I melt or mix with 112*lb*. of Copper of 18*d*. the *lb*. so that 1*lb*. of this Mixture may stand me in 12*d*. ?
*Ans*w. 224 at 2 $\frac{1}{2}d$. the *lb*. 336 at 10*d*. and 532*lb*. at 16*d*. the *lb*.

————— VH. —————

24. How much fine Silver must be put to Bullion of 8 $\frac{1}{2}$ oz. fine, to bring it to 10 oz. fine? *Ans*w. 9 oz.

R U L E.

As the Difference of the greater Fineness and the Mass is to the Difference of the lesser Fineness and greater, so is the Mass or Quantity to the Quantity required.

$$12 \begin{array}{l} \swarrow 10 \\ \searrow 8\frac{1}{2} \end{array} \left| \begin{array}{l} 1\frac{1}{2} \\ 2 \end{array} \right. \xrightarrow{\quad} 1\frac{1}{2} \rightarrow 12 \text{ } \textit{Ans}w. \text{ } 9 \text{ oz.}$$

Or thus,

Subtract the Fineness one from another, the Remainder multiply by the Mass or Quantity, that Product divide by the Difference of the Mass and the greater Fineness, and you have the Fineness required.

Alligation Alternate.

Greater Fineness	10
Lesser	$8\frac{1}{2}$
	$1\frac{1}{2}$
	12

Difference between
the Mass and great-
er Fineness. $\left. \begin{array}{l} 18 \\ 2 \end{array} \right\} 9$

Proof.

Bullion	12	fine $8\frac{1}{2}$
fine - - -	9	fine 9

If 21 ——— $17\frac{1}{2}$ ——— 12 comes 10 oz.

25. A Refiner has 28lb. of Silver Bullion of $8\frac{1}{2}$ oz. fine, how much fine Silver must he put to it to bring it to 10 oz. fine? *Answ.* 21lb.

26. A Goldsmith has Gold of $19\frac{1}{3}$ Carats fine, how much fine Gold must he put to it to bring it to $23\frac{1}{2}$ Carats fine? *Answ.* 200 Carats.

— VIII. —

Case 3. Called *Alligation Total*, the particular Rates of all the Ingredients proposed to be mixed, and the Sum of all their Quantities, with the main Rate of that Sum, being given, to find the particular Quantities of the Mixture.

27. A Tobatconist has two Sorts of Tobacco, viz. of 18d. and 9d. the lb. and has a Mind to mix 112lb. so that it may stand him in 16d. the lb. I demand how much he must take of each? *Answ.* $87\frac{1}{3}$ lb. of 18d. and $24d\frac{8}{9}$ lb. of 9d.

R U L E.

As the Sum of all the Differences is to the Sum of all the Quantities given, so is every particular Difference to its particular Quantity. *Example.*

Example.

$$\begin{array}{rcl}
 16 & \begin{array}{l} \nearrow 18 \\ \searrow 9 \end{array} & \begin{array}{l} 7 \\ 2 \end{array} \\
 & \text{lb.} & \\
 9-112 & \begin{array}{l} \nearrow 7 \text{ comes } 87\frac{1}{2} \\ \searrow 2 \text{ comes } 24\frac{3}{4} \end{array} & \\
 \text{Proof.} & & \\
 \begin{array}{r} 87\frac{1}{2} \text{ at } 18d. \text{ is } 1568 \\ 24\frac{3}{4} \text{ at } 9d. \text{ is } 224 \\ \hline \end{array} & & \begin{array}{r} 112 \\ \hline \end{array} \\
 \text{If } 112 \text{ ————— } 1792 \text{ ————— } 1 \text{ lb.} & & \text{Answ. } 16d.
 \end{array}$$

28. A Goldsmith has two Sorts of Silver Bullion, the one of 10 oz. fine, and the other of 5 oz. fine, and has a Mind to mix a lb. of it, so that it shall be 8 oz. fine. I demand how much of each he must take? *Answ.* $4\frac{1}{2}$ of 5 oz. fine, and $7\frac{1}{2}$ of 10 oz. fine.

29. A Grocer has Sugar of 12d. the lb. and of $6\frac{1}{2}d.$ the lb. and has a Mind to mix 2 Hundred wt. of it, so that he may sell it at 8d. the lb. I demand how much of each Sort he must take? *Answ.* $162\frac{1}{11}lb.$ of $6\frac{1}{2}d.$ and $61\frac{1}{11}lb.$ at 12d.

30. A Refiner has Silver of $11\frac{1}{2}oz.$ fine, and of 7 oz. fine, and has a Mind to make up a Piece of Work requiring 35lb. of $9\frac{3}{4}oz.$ fine, how much must he take of each? *Answ.* $21\frac{7}{8}lb.$ of $11\frac{1}{2}oz.$ fine, and $13\frac{1}{8}lb.$ of 7 oz. fine.

31. Brandy of 3s. 6d. and 5s. 9d. the Gallon, is so to be mixt, that a Hhd. of 63 Gallons may be sold for 12l. 12s. I demand how many Gallons must be taken of each? *Answ.* 14 Gallons of 5s. 9d. and 49 Gallons of 3s. 6d.

— IX. —

32. A Grocer had Sugar of 12, 10, and 5*d.* the *lb.* and mixt 112*lb.* of it, and then he found it stood him in 8*d.* the *lb.* I demand how many *lb.* he took of each Sort? *Ans.* 28*lb.* of 12*d.* 28*lb.* of 10*d.* and 56*lb.* of 5*d.*

Example.

$$\begin{array}{r} \text{S. } \left\{ \begin{array}{l} 12 \\ 10 \\ 5 \end{array} \right. \begin{array}{l} \text{---} \\ \text{---} \\ \text{---} \end{array} \begin{array}{l} 3 \\ 3 \\ 3 \end{array} \\ \quad \quad \quad 4 \& 2 \text{ are } 6 \end{array}$$

Proof.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
112 — 112	3	28 <i>lb.</i> at 12 <i>d.</i>	1 : 8 : 0
3	3	28 <i>lb.</i> at 10 <i>d.</i>	1 : 3 : 4
6	6	56 <i>lb.</i> at 5 <i>d.</i>	1 : 3 : 4

112 at 8*d.* is £. 3 : 14 : 8

33. A Vintner has 3 Sorts of Wine, viz. of 24*d.* 22*d.* and 18*d.* the Gallon, now he has a Mind to mix a Cask of 60 Gallons, so that he may sell it at 20*d.* the Gallon, how much must he take of each? *Ans.* 12 at 24*d.* 12 at 22*d.* and 36 at 18*d.*

34. A Goldsmith has 3 Sorts of Silver, viz. of 11, 8, and 5 *oz.* fine, and has a Mind to make a Piece of Work that shall weigh 10*lb.* of 9 *oz.* fine, how much of each must he take? *Ans.* 5½*lb.* of 11 *oz.* fine, 2½*lb.* of 8 *oz.* fine, and 2½*lb.* of 5 *oz.* fine.

35. A Cask of 58 Gallons is filled with Liquor of 7, 8, and 10*d.* the Gallon, and then it stands in 9½*d.* the Gallon, I would know how many Gallons of each Sort was taken? *Ans.* 40½ Gallons of 10*d.* 8½ Gallons of 8*d.* and 8½ of 7*d.*

— X. —

36. A Merchant has Brandy of 3, 5, 6, and 7s. the Gallon, and has a Mind to fill a Cask of 40 Gallons so that he may sell it at 5s. 6d. the Gallon, how many Gallons must he take of each?
Ans.

Example.

$\left. \begin{array}{l} 3 \\ 5 \\ 6 \\ 7 \end{array} \right\} \begin{array}{l} - 0\frac{1}{2} \\ - 1\frac{1}{2} \\ - 2\frac{1}{2} \\ - 2\frac{1}{2} \end{array}$	$\begin{array}{c} \diagup \\ \diagdown \end{array}$	$\begin{array}{c} 0\frac{1}{2} \\ 1\frac{1}{2} \\ 2\frac{1}{2} \\ 0\frac{1}{2} \end{array}$	<table style="border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">at 3s.</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">12</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">12</td> <td style="padding: 2px 5px;">at 5s.</td> <td style="padding: 2px 5px;">3</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">00</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">20</td> <td style="padding: 2px 5px;">at 6s.</td> <td style="padding: 2px 5px;">6</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">00</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">at 7s.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">08</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> </table>	4	at 3s.	0	:	12	:	0	12	at 5s.	3	:	00	:	0	20	at 6s.	6	:	00	:	0	4	at 7s.	1	:	08	:	0
4	at 3s.	0	:	12	:	0																									
12	at 5s.	3	:	00	:	0																									
20	at 6s.	6	:	00	:	0																									
4	at 7s.	1	:	08	:	0																									
If 5-40																															
40 at 5½s. is 11 : 0 : 0																															

Or this Way.

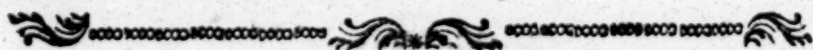
$\left. \begin{array}{l} 3 \\ 5 \\ 6 \\ 7 \end{array} \right\} \begin{array}{l} - - 1\frac{1}{2} \\ - - 0\frac{1}{2} \\ - - 0\frac{1}{2} \\ - - 0\frac{1}{2} \end{array}$	$\begin{array}{c} \diagup \\ \diagdown \end{array}$	$\begin{array}{c} 1\frac{1}{2} \\ 0\frac{1}{2} \\ 0\frac{1}{2} \\ 2\frac{1}{2} \end{array}$	<table style="border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">12</td> <td style="padding: 2px 5px;">at 3s.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">16</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">at 5s.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">00</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">at 6s.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">04</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="padding: 2px 5px;">20</td> <td style="padding: 2px 5px;">at 7s.</td> <td style="padding: 2px 5px;">7</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">00</td> <td style="padding: 2px 5px;">:</td> <td style="padding: 2px 5px;">0</td> </tr> </table>	12	at 3s.	1	:	16	:	0	4	at 5s.	1	:	00	:	0	4	at 6s.	1	:	04	:	0	20	at 7s.	7	:	00	:	0
12	at 3s.	1	:	16	:	0																									
4	at 5s.	1	:	00	:	0																									
4	at 6s.	1	:	04	:	0																									
20	at 7s.	7	:	00	:	0																									
If 5 40 2																															
40 at 5½s. 11 : 00 : 0																															

37. A Tobacconist has Tobacco of 5½d. 7¾d. 12½d. and 15¼d. the lb. makes up 4 Boxes of them of 22lb. each, so that it stands him in 9¼d. the lb. I want to know how many lb. he took of each Sort?
Ans. 22½lb. of 15¼d. 9¾lb. of 12½d. 19½lb. of 7¾d. and 36½lb. of 5½d. or otherwise.

38. A Merchant has certain Merchandizes, some of 9d. some of 12d. some of 24d. and some of 30d. the lb. how much of each Sort must he take to make up 99lb. so that they may stand him in 20d. the lb. ? *Answ.* 24lb. of 30d. 33lb. of 24d. 30lb. of 12d. and 12lb. of 9d. or otherwise.

39. A Druggist has Drugs of 18, 15, 12, 9, 8, and 5d. the lb. how much must he take of each Sort to make up 318lb. so that they may stand him in 11d. the lb. ? *Answ.* 82 $\frac{2}{3}$ lb. of 18d. 41 $\frac{1}{3}$ lb. of 15d. 27 $\frac{1}{3}$ lb. of 12d. 13 $\frac{2}{3}$ lb. of 9d. 55 $\frac{7}{3}$ lb. of 8d. and 96 $\frac{8}{3}$ lb. of 5d. or otherwise.

40. It is required to make up 100*l.* to consist of one Hundred Pieces, viz. of Moidores of 30*s.* Guineas of 23*s.* and Pistoles of 18*s.* 6d. *Quære*, how many of each must be taken to make up said Sum of one Hundred Pounds ? *Answ.* 6 at 30*s.* 18 at 23*s.* and 76 at 18 $\frac{1}{2}$ *s.*



C H A P. XXXIII.

SINGLE FALSE POSITION.

S E C T. I.

THIS Rule is so called, because by supposed Numbers taken at Adventure, and working therewith, according to the Nature of the Question, as if it were the true Number, the true Number sought is discovered.

1. Suppose the Ages of three Persons make together 144 Years, and that the Age of the second is double the Age of the first, and the Age of the third, is treble the Age of the second, what is the Age of each Person ? *Answ.* 16, 32 and 96 Years.

Rule.

Rule.

*As the Result of your Position is to the Position,
so is the given Number to the true Number sought.*

Suppose.

The 1st Man's Age 1
then, the 2d must be 2
and the 3d must be 6

—————
If 9—1—144 comes 16

If 9—2—144 ——— 32

If 9—6—144 ——— 96
—————

Proof 144

2. Three Merchants made up a Stock of 500*l*.
B put in twice as much as A, and C four Times
as much as B, how much did each of them put in?
*Ans*w. A 45*l*. B 90*l*. and C 363*l*.

3. There is a Cistern of Water which has 3
Cocks, when the greater, or first Cock is opened
all the Water runs out in one Hour, when the
second Cock is opened, it runs out in two Hours,
and when the third Cock is set open, it runs out
in three Hours; in what Time will all the Water
run out if all the Cocks are set open at once?
*Ans*w. 32 $\frac{8}{11}$ Minutes.

4. What Number is it whose $\frac{1}{6}$, $\frac{1}{7}$, and $\frac{1}{3}$ Parts
make 27? *Ans*w. 42.

5. Peter drinks a Cask of Beer out, qt. 16 Gal-
lons in 6 Days, and John when he goes about it
does it in 4 Days; now if they should both drink
together, in what Time would they make an End
of it? *Ans*w. In 2 Days 9 $\frac{3}{4}$ Hours.

6. Three Persons, A, B and C discoursing con-
cerning their Age, says B to A, I am as old, and
half

half again as old as you, then says C to B, I am twice as old as you, now says A to them both, I am sure the Sum of all our Ages is 154 Years, I demand each Man's Age? *Answ.* A 28, B 42, and C 84.

7. A Gamester loses, at 4 Turns at Dice, 160 Shillings, and trebled each Turn the Sum he put in, I would know for how much he played the first and last Time? *Answ.* 4s. and 108s.

8. Forty Yards of Drugget, and 40 Yards of Cloth cost 24*l.* 10s. but every Yard of Cloth cost double as much as a Yard of Drugget, I demand what a Yard of Drugget cost? *Answ.* 3s. 6d.

9. Suppose I lend at Interest a certain Sum of Money, at the Rate of 8 per Ct. simple Interest, and, at the End of 10 Years, I received both for Principal and Interest 600*l.* I demand how much was the principal Sum I lent out at first? *Answ.* 333*l.* 6s. 8d.

— II. —

10. A Master Mason, when he works alone, can finish a Piece of Work in $2\frac{1}{2}$ Days, and his Journeyman can do the same in $3\frac{1}{2}$ Days, and his Apprentice can do it in $4\frac{1}{2}$ Days; now, I demand in what Time they would finish the said Work, if all three together go about it? *Answ.* In 1 Day, 3 Hours.

Suppose

Double false Position.

229

Suppose in one Day.

ds.	ps. w.	d.	
If $2\frac{1}{2}$	— 1	— 1	comes $\frac{2}{3}$
$3\frac{3}{4}$	— 1	— 1	- - $\frac{4}{5}$
$4\frac{1}{2}$	— 1	— 1	- - $\frac{2}{9}$
			$\frac{8}{9}$

ps. w. day ps. w.
If $\frac{8}{9}$ ——— 1 ——— 1 *Ans.* $1\frac{1}{8}$ Day.

11. There are 5 Mills, the first grinds 7 Bushels of Corn in an Hour, the 2nd 5, the 3d 4, the 4th 3, and the 5th 1; I demand in what Time the 5 Mills will grind 500 Bushels, if they work all together? *Ans.* In 25 Hours.

12. There is a Cistern which can be filled by a Cock in 12 Hours, and has a Hole in the Bottom by which it can be emptied in 18 Hours, I demand in what Time the Cistern will be full, the Water running out of the Hole at the Bottom, at the same Time when the Water runs in from the Cock above? *Ans.* In 36 Hours.

13. There are 3 Mills, the first grinds in 2 Hours 3 Bushels of Wheat, the 2nd in 3 Hours 5 Bushels, and the 3d in 5 Hours 7 Bushels, I demand in how many Hours will they together grind 36 Bushels? *Ans.* In $7\frac{1}{3}\frac{1}{7}$ Hours.



C H A P. XXXIV.

DOUBLE FALSE POSITION.

S E C T. I.

Asks B how much his Horse cost him, B answered, that if his Horse cost him 6 Times as much as he did, and 4*l.* more, he would stand him in 100*l.* I demand what the Horse cost?
Ans. 16*l.* U To

half again as old as you, then says C to B, I am twice as old as you, now says A to them both, I am sure the Sum of all our Ages is 154 Years, I demand each Man's Age? *Answ.* A 28, B 42, and C 84.

7. A Gamester loses, at 4 Turns at Dice, 160 Shillings, and trebled each Turn the Sum he put in, I would know for how much he played the first and last Time? *Answ.* 4s. and 108s.

8. Forty Yards of Drugget, and 30 Yards of Cloth cost 24*l.* 10s. but every Yard of Cloth cost double as much as a Yard of Drugget, I demand what a Yard of Drugget cost? *Answ.* 3s. 6d.

9. Suppose I lend at Interest a certain Sum of Money, at the Rate of 8 per Ct. simple Interest, and, at the End of 10 Years, I received both for Principal and Interest 600*l.* I demand how much was the principal Sum I lent out at first? *Answ.* 333*l.* 6s. 8d.

— II. —

10. A Master Mason, when he works alone, can finish a Piece of Work in $2\frac{1}{2}$ Days, and his Journeyman can do the same in $3\frac{1}{4}$ Days, and his Apprentice can do it in $4\frac{1}{2}$ Days; now, I demand in what Time they would finish the said Work, if all three together go about it? *Answ.* In 1 Day, 3 Hours.

Suppose

Double false Position.

220

Suppose in one Day.

ds.	ps. w.	d.	
If $2\frac{1}{2}$	— 1	— 1	comes $\frac{2}{5}$
$3\frac{3}{4}$	— 1	— 1	- - $\frac{4}{5}$
$4\frac{1}{2}$	— 1	— 1	- - $\frac{2}{9}$
			$\frac{8}{9}$

ps. w. day ps. w.
If $\frac{8}{9}$ ——— 1 ——— 1 *Ans.* $1\frac{1}{8}$ Day.

11. There are 5 Mills, the first grinds 7 Bushels of Corn in an Hour, the 2nd 5, the 3d 4, the 4th 3, and the 5th 1; I demand in what Time the 5 Mills will grind 500 Bushels, if they work all together? *Ans.* In 25 Hours.

12. There is a Cistern which can be filled by a Cock in 12 Hours, and has a Hole in the Bottom by which it can be emptied in 18 Hours, I demand in what Time the Cistern will be full, the Water running out of the Hole at the Bottom, at the same Time when the Water runs in from the Cock above? *Ans.* In 36 Hours.

13. There are 3 Mills, the first grinds in 2 Hours 3 Bushels of Wheat, the 2nd in 3 Hours 5 Bushels, and the 3d in 5 Hours 7 Bushels, I demand in how many Hours will they together grind 36 Bushels? *Ans.* In $7\frac{1}{3}\frac{2}{7}$ Hours.



C H A P. XXXIV.

DOUBLE FALSE POSITION.

S E C T. I.

AsKed B how much his Horse cost him, B answered, that if his Horse cost him 6 Times as much as he did, and 4*l.* more, he would stand him in 100*l.* I demand what the Horse cost? *Ans.* 16*l.*

U

To

To work this Rule, make Choice of any Number, and work with it according to the Nature of the Question, as per Example: I suppose the Horse cost 20l. which I multiply by 6 comes 120l. and add 4, makes 124, which ought to be but 100, ergo, too much by 24, which I call the first Error, and mark it thus, (+) signifying more: Again, I suppose the Horse cost 14l. which being worked as before, comes 12 too little, which is the second Error, and mark it thus (—) signifying, less; then add the Errors more and less together, comes 36 for a Divisor, then multiply the Positions and their Errors cross-wise, and their Product add, the Sum divide by 36 (the Divisor) and the Quotient is the Answer required.

NOTE, When the Signs of more or less are alike subtract, but when unlike, add.

Example.

Suppose 20 $\begin{array}{r} 6 \\ \hline 120 \\ \text{add } 4 \\ \hline 124 \\ 100 \\ \hline 24+ \end{array}$	Suppose 14 $\begin{array}{r} 6 \\ \hline 84 \\ 4 \\ \hline 88 \\ 100 \\ \hline 12- \end{array}$	$\begin{array}{r} + 24 \\ - 12 \\ \hline 36 \text{ Divisor} \end{array}$
$\begin{array}{r} 20 \\ \hline 240 \end{array}$	$\begin{array}{r} 14 \\ \hline 336 \\ 240 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 6 \\ \hline 96 \\ 4 \\ \hline 100 \text{ Proof} \end{array}$
$\begin{array}{r} 876 \\ 866 \\ 8 \\ \hline \end{array} \left. \vphantom{\begin{array}{r} 876 \\ 866 \\ 8 \end{array}} \right\} 16 \text{ Answ.}$		

Or thus,

NOTE. Plus, or more, subtract from the middle Number, Minus, or less, add to the middle Number, this (=) signifies equal.

$$\begin{array}{r} 1\ a \\ 6 \end{array}$$

If $6\ a + 4 = 100$ what is $1\ a$

$$\begin{array}{r} 4 \\ \hline \end{array}$$

$$\begin{array}{r} 96 \\ 66 \end{array} \left. \vphantom{\begin{array}{r} 96 \\ 66 \end{array}} \right\} 16\ \text{Answ.}$$

2. One being asked how old he was, answered if my Age was doubled, the half, and the Quarter of my Age added to it, more one Year I should be 100 Years old; what is his Age? *Answ.* 36 Years.

3. I being asked how long I kept School, I answered, if you treble the Years, and add to it the half and the Quarter of the Years more $\frac{3}{4}$, it will be $34\frac{1}{2}$ Years. I demand the Time? *Answ.* 9 Years.

4. If the Number of my Scholars was doubled, the $\frac{1}{2}$, and the $\frac{1}{4}$ of the Number added to it, more 30, they would be 250, how many are they? *Answ.* 80.

5. One asked how many Pence I had in my Pocket? I told him that my Pence, with $\frac{1}{2}$, and $\frac{1}{4}$ with $\frac{1}{8}$ together, less 2, would make 43d. well then says he, you have 24d. *Answ.* Right.

6. If I made my Money 8 Times more than it is, and gave 6 Times 6 of it to the Poor, and divided the rest of it by 4, then I find that every Part is 21 Crowns, tell me how many Crowns I had ?

Ans. 15 Crowns.

7. A asked B to lend him the 100 Crowns he had in his Pocket, B answered, he had not so many, but says he, if I had half as many more as I have, with $\frac{1}{4}$ and $\frac{1}{8}$ and $\frac{1}{6}$ of the Number of Crowns which I have, less 3, there would be 46, well then, says A, I find you have only 24 Crowns ? *Ans.* Just as many.

8. A Man on Horseback sets out from a certain Town, and a Coach sets out from another Town, at a certain Distance they meet, the Coachman asks the Man on Horseback how many Miles he had rid, he answered, that, if he had rid $1\frac{1}{2}$ Times as far again, as he had done, he would have rid 36 Miles, well then, says the Coachman, I have rid $\frac{1}{2}$ as far, and $\frac{1}{4}$ as far as you, now tell me how many Miles the Towns are asunder ? *Ans.* $25\frac{1}{3}$ Miles.

— II. —

9. Divide 15 into two such Parts, so that when the greater is multiplied by 4, and the lesser by 16, their Products must be equal ? *Ans.* 12 and 3.

Example.

Example.

Suppose
9 and 6
4 16

36 96
36

60+



9 6

360 240

Suppose
10 and 5
4 16

40 80
40

40+

10 5

600 300
360 240

240 60

20

12 3

4 16

Proof 48 48

60+

40+

20

10. A Master hires a Journeyman, on this Condition, that he shall have 12*d.* a Day, and his Diet, for every Day he works, but for every Day he does not work, he is to pay his Master 6*d.* for his Diet; now, the 30th Day they come to an Account, but neither of them receives or pays any Money. I demand how many Days he worked, and how many Days he was idle? *Ans*w. He worked 10 Days, and was idle 20.

11. What Numbers are they, that when you add them they make $266\frac{2}{3}$, and when you multiply the one by 5, and the other by 3, their Products shall be equal? *Ans.* $166\frac{2}{3}$, and 100.

12. There are two Numbers, when they are added together, make 102, and the one multiplied by 15, is the same as the other, being multiplied by 21, what are those Numbers? *Ans.* $59\frac{1}{2}$ and $42\frac{1}{2}$.

13. Divide 21 into two such Parts, so that when the greater is divided by the lesser, and the lesser by the greater, and afterwards the greater Quotient multiplied by 5, and the lesser by 125, their Products shall be equal? *Ans.* $17\frac{1}{2}$, and $3\frac{1}{2}$.

— III. —

14. A Master hires a Servant for 40 Days, when he works, he is to have 15*d.* a Day, and when he is idle he is to pay his Master 4*d.* a Day; at the End of 40 Days they come to an Account, and the Servant receives 23 Shillings and a Penny, tell me how many Days he wrought, and how many he was idle? *Ans.* He wrought 23 Days, and was 17 Days idle.

Example.

Double false Position.

235

Example.

Suppose		Suppose	
wk'd, 25 at 15d. 375		24 at 15d. 360	
idle, 15 at 4d. 60		16 at 4d. 64	
40	315	40	296
should be	277		277
s. d.			
23 : 1	+38	+19	38+
12			19+
277d.	25	24	19
	475	912	
		475	
	437	{	s. d.
	199		23 at 15d. 28 : 9
	2		17 at 4d. 5 : 8
	Proof 40		23 : 1

15. A Merchant has 100 Barrels of Wheat and Barley, which cost him 46*l.* 10*s.* the Wheat stands him at 12*s.* and the Barley at 6*s.* the Barrel, tell me how many Barrels he has of each? *Ans*w. 55 of Wheat, and 45 of Barley.

16. There are two Numbers when you add them they make 100, and when you multiply the greater by 3, and the lesser by $4\frac{7}{8}$, their Difference is $4\frac{1}{8}$, what are those Numbers? *Ans*w. $62\frac{1}{2}$, and $37\frac{1}{2}$.

17. A Goldsmith has two Masses of Silver, wt. together 24*lb.* the heaviest at 5*s.* and the lightest at 5*s.* 4*d.* the oz. amounting together to 74*l.* 4*s.* Tell me how much each Mass weighed? *Ans*w. 13*lb.* and 11*lb.*

18. There

18. There are two Numbers which when added make 35, if you divide the lesser by 4 and the greater by 3, their Quotients being added will make 11. I demand the Numbers? *Answ.* 27 and 8.

19. A departs from Dublin, at the same Time That B departs from Cork, A is bound for Cork, and B for Dublin, each keep in the same Road, and the Distance between Dublin and Cork, suppose 100 Miles; when they meet, the Miles A had travelled being multiplied by $3\frac{1}{4}$, and the Miles B had travelled being multiplied by $5\frac{1}{4}$, the Difference of their Products will be $75\frac{1}{4}$. I demand how much farther the one went than the other? *Answ.* A went farther by $33\frac{1}{2}$ Miles.

— IV. —

20. A and B go out of a Town, keeping both the same Road, but A goes every Day 8 Miles, and B goes the first Day one Mile, the second Day 2 Miles, and so on, every Day one Mile more. I demand when B will overtake A? *Answ.* In 15 Days.

Example.

Example.

Suppose A	5	B	1
	8		2
	—		3
	40		4
	15		5
	—		—
	28		15
	8—		

Suppose A	7	B	1
	8		2
	—		3
	56		4
	28		5
	—		6
	28		7
	7—		—
			28

$$\begin{array}{r}
 \begin{array}{cc}
 5 + & 4 + \\
 \diagdown & \diagup \\
 5 & 7
 \end{array} \\
 \hline
 \begin{array}{ccc}
 20 & 35 & 1 \\
 & 20 & \\
 \hline
 & 28 & \\
 & 28 &
 \end{array}
 \end{array}
 \left. \begin{array}{l} 28 \\ 28 \end{array} \right\} 15 \text{ Days.}$$

21. There are two Master Masons, who are each to build a Wall of equal Dimensions, A employs so many Men, as finish in a Day $22\frac{1}{2}$ Perches, B employs, the first Day, as many Men as finish 6 Perches, the second Day, as many as finish 9 Perches, and so on, every Day 3 Perches more; in what Time will they have built an equal Number of Perches? *Ans*w. In 12 Days.

22. A Gentleman hires 2 Labourers, to the one he gives constantly 9d. a Day, to the other he gives the first Day 2d. the second Day 4d. the third Day 6d. and so on, every Day 2d. more. I demand in how many Days they will have earned equal Money? *Ans*w. In 8 Days.

23. A and B buy an equal Quantity of Cloth, and lay out an equal Quantity of Money, A gives 7s. for every Yard he buys, and B gives 2s. for the

the first Yard, and 4*s.* for the second Yard, and so on, 2*s.* more for each Yard. I would know how many Yards they bought, and how much Money they laid out? *Ans.* 6 Yards, and laid out 42*s.* each.

— V. —

24. What Numbers are they, that when added they make 25, and when you half the one, and double the other, their Sums shall be equal? *Ans.* 20 and 5.

Example.

Suppose
14 and 11
double 11
 $\frac{1}{2}$ is 7 —

22
7
—

15+

14

70

Suppose
18 and 7
double 7
 $\frac{1}{2}$ is 9 —

14
9
—

5+

18

270

70

15+
5+
—

10

200 { 20
20

Consequently the other 5

25. One received 2 Heaps of Crowns making both together 36, the $\frac{1}{2}$ and $\frac{1}{4}$ of the first Heap, were equal to the $\frac{1}{4}$ and $\frac{1}{8}$ of the second Heap, I demand how many Crowns there were in each Heap? *Ans.* 12 and 24.

26. There

26. There are two Numbers, when you add them together they make 30, the $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{6}$ of the greater is equal to $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ of the lesser Number, tell me what are the Numbers? *Answ.* 12 and 18.

— VI. —

27. A and B discoursing of their Money, says A to B, if you give me 3*s.* of your Money, I shall have 5 Times as many Shillings as you have left, no, says B, it is better that you give me 5*s.* of yours, for then our Money will be equal, how many Shillings had each? *Answ.* A 17 and B 7.

Example.

Suppose

A 22 B 8

3 3

25 5

22 8

5 5

17 13

13

4+

Suppose

A 12 B 6

3 3

15 3

12 6

5 5

7 11

11

4-

4+

4-

8

22 8

88 32

286 86

\$

17 & 7

12 6

48 24

28. Says

28. Says A to B give me 1s. of your Shillings, and I shall have double the Shillings that you have left; B answered, it is more reasonable that our Sums should be equal, and therefore, if you give me 1s. I shall have as many as you. I demand how many Shillings each had? *Answ.* A 7, and B 5.

29. If from a Piece of Cloth I cut $\frac{2}{3} + 11$ Yards there is left $\frac{1}{2} - 17$ Yards, I demand how many Yards were in the whole Piece? *Answ.* 36 Yards.

— VII. —

30. What Number is it, whose $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{3}{8}$ being multiplied together, make 24? *Answ.* 8.

Example.

Suppose	Suppose
12 12	4 4
12 —	— 4
— $\frac{1}{2}$ is 6	$\frac{1}{2}$ is 2 —
144 $\frac{1}{4}$ is 3	$\frac{1}{4}$ is 1 16
12 —	— 4
— 18	2 —
1728 $\frac{3}{8}$ is $4\frac{1}{2}$	$\frac{3}{8}$ is $1\frac{1}{2}$ 64
— 81	— 3
Ought to be 24	— 24
— 57	— 21
1728	64
— 36288	— 3648
— 3648	
— 39926	
— 7888	
— 77	
	$\sqrt{512} =$

21—

57+

—

78

Or

Questions for Exercise.

241

Or thus,

Suppose

I a

$$\begin{array}{r} 1 \text{ --- } 1 \text{ --- } 3 \\ \text{---} \quad \text{---} \quad \text{---} \\ 2 \text{ --- } 4 \text{ --- } 8 \end{array}$$

If $1 a^{\frac{3}{4}} = 24$ what is $1 a$
64

$$\begin{array}{r} 2836 \} 3 \\ 333 \} \text{---} 512 = 8 \end{array}$$

31. A asked B how old he was, B answered, if $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{3}{8}$ of my Years are multiplied, their Product will be 192, tell me B's Age? *Ans.* 16 Years.

32. What Number is it whose $\frac{3}{4}$, $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{6}$ being multiplied together produces $6998\frac{2}{3}$? *Ans.* 36.



C H A P. XXXV.

Questions to exercise most of the RULES hitherto delivered, promiscuously set down.

THERE is a Mast or Pole $\frac{1}{5}$ of its Length stands in the Ground, 12 Feet of it in the Water, and $\frac{2}{5}$ of its Length in the Air, or above Water, I demand the whole Length? *Ans.* 216 Feet.

2. If from a Piece of Cloth I cut $\frac{3}{8}$ —12 Yards, then there is left $\frac{3}{8}$ +20 Yards, I demand how many Yards, there were in the Piece? *Ans.* 128 Yards.

X

3. Three

3. Three Merchants, A, B, C, have gained in Partnership 234 *l.* which they are to divide in this Manner, when the Profit of A is multiplied by 2, and that of B by 3, and C's by 4, their products are to be equal, I demand how much each of them is to receive? *Answ.* A 108 *l.* B 72 *l.* and C 54 *l.*

4. When 198 *lb.* of London are carried 8 Miles for 25 *s.* 7½ *d.* how much must one give to carry 480 *lb.* of Amsterdam 15 Miles, if 110 *lb.* at London are equal to 100 at Amsterdam? *Answ.* 61. 8 *s.*

5. There is a Wall of 2000 Feet long, and 2½ Feet thick, the Stones are ½ Foot long, ¼ Foot broad, and ⅓ Foot thick, including the Mortar, and in the whole Wall are 4000000 Stones, I demand the Height of the Wall? *Answ.* 12½ Feet.

6. What Numbers are they whose ½, ⅓, and ¼ of the one is equal to ⅓, ⅓, and ⅓ of the other? *Answ.* 264 and 306.

7. There are two Pieces of Linen, the one is 9 Yards shorter than the other, and cost 3 *l.* 1½ *s.* the other Piece at the same Price cost 3 *l.* 12 *s.* I demand how many Yards are there in both Pieces, and the Price of one Yard? *Answ.* 111 Yards, at 1½ *s.* the Yard.

8. If with 100 Barrels of Beer I mix 66⅔ Barrels of Water, it is 3 Shilling Beer. I demand what Beer it was before? *Answ.* 5 Shilling Beer.

9. Tell me a Number whose half being divided by 6, its ⅓ by 4, and its ¼ by 3, each Quotient shall be 9? *Answ.* 108.

10. A Piece of Satin cost a certain Sum, and being sold for 3 *l.* 10 *s.* there is lost ⅔ in a Shilling, I demand the first Cost? *Answ.* 5 *l.* 16 *s.* 8 *d.*

11. A has Brandy which cost him 4s. the Gallon, in Barter puts it at 4s. and 6d. and gives 6 Months Time, B has Wine which stands him in 10 l. 5 s. the Hhd. and puts it at 11 l. I demand how much Time B must give to make the Barter equal? *Answ.* $3\frac{2}{3}$ Months.

12. A sets out from Cork to Clonmell, at the same Time B sets out from Clonmell towards Cork, the Distance between both Places suppose 30 Miles, and both Persons keep the same Road, A goes every Day 2 Miles more than B, and the second Day they meet. I demand how many Miles a Day each of them has travelled? *Answ.* A $8\frac{1}{2}$, and B $6\frac{1}{2}$.

13. When a Bushel of Wheat costs 3s. 4d. the Penny Loaf weighs 12 Ounces, what shall a Loaf worth 9d. weigh when the Wheat is at 10 s. 8 d.? *Answ.* $33\frac{3}{4}$ Ounces.

14. If 12 Boarders drink in 7 Days half a Barrel of Beer, how long would the same last if 2 Boarders more came among them? *Answ.* 6 Days.

15. If a Hhd. of Wine be sold for 10 l. there is lost 6 per Ct. how much is the Gain or Loss per Ct. when 5 Hhds. are sold for 45 l. 10 s.? *Answ.* $14\frac{2}{3}$ per Ct. Loss.

16. Eight Persons, consisting of Men and Women, have spent together 5 s. 4 d. each Man 10 d. and each Woman 6d. I demand how many Men and Women there were? *Answ.* 4 Men and 4 Women.

17. What is the Product of 19 l. 19 s. $11\frac{1}{2}$ d.? being multiplied by 19 l. 19 s. $11\frac{1}{2}$ d.? *Answ.* 399 l. 19 s. $238\frac{1}{2}$ d.

18. I have a Bond, $\frac{1}{3}$ whereof is present Payment, $\frac{1}{4}$ in 4, $\frac{1}{5}$ in 5, and the Remainder in 6 Months, in what Time might I receive the same without any Prejudice to myself? *Answ.* In 3 Months 9 Days.

19. How many Yards of Bays of $1\frac{1}{8}$ Yards wide, will be wanted to hang a Room of $16\frac{1}{2}$ Feet long, $12\frac{1}{4}$ Feet broad, and $10\frac{1}{4}$ Feet high? *Answ.* $62\frac{1}{2}$ Yards.

20. A Fisherman being asked how much Fish he had caught, answered, that the $\frac{3}{4}$ of his Fish were Herrings, $\frac{1}{5}$ Whittings, $\frac{2}{5}$ Haddocks, and 21 Cods, now tell me how many he had in all, and how many of each Sort? *Answ.* 135 Herrings, 144 Haddocks, 60 Whittings, and 21 Cods, in all 360.

21. A Gentleman has at Work 3 Master Masons, who have each 8 Journeymen, and earn in 5 Weeks (each Week counted 6 Days) 43 *l.* 4 *s.* now the said Gentleman employs in another Work 5 Master Masons, who have each 10 Journeymen, who earn every Week (each Week $5\frac{1}{2}$ Days) as much as the former. I demand how much they would earn in 8 Weeks? *Answ.* 132 *l.*

22. Two Merchants enter into Partnership, and each of them puts in 12 Pieces of Cloth, but those of A cost 48 *l.* more than those of B, the Cloth being sold they find to have gained $273\frac{3}{4}$ *l.* of which B has for his Share $122\frac{2}{3}$ *l.* to know at how much each Piece was valued? *Answ.* A's at 21 *l.* and B's at 17 *l.*

23. I once counted my Pence, and found that when I multiplied the $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{5}$ of the Number, the Product was 72000 *d.* tell me how many Shillings I had? *Answ.* 10 *s.*

24. If 7 Persons drink 36 Gallons of Beer in 12 Days, how many Gallons will be drank out at that Rate in 8 Days by 14 Persons? *Answ.* 48 Gall.

25. One being asked the Hour of the Day, answered, that the Time past from Noon was equal to $\frac{2}{13}$ of the Time remaining from Midnight. I demand what o'Clock it was? *Answ.* 36 Minutes past 1.

26. Three Merchants are in Company; their Stock is 400 *l.* the Money of A continued in 5 Months, that of B 6 Months, and C's 9 Months, and they gain 375 *l.* which they divide equally. I demand the Stock each of them put in? *Answ.* A 167 $\frac{1}{3}$, B 139 $\frac{2}{3}$, and C 93 $\frac{1}{3}$ *l.*

27. There is a certain Number, which if you divide by 7, its Quotient multiplied by 3, that Product divided by 5, from the Quotient subtract 20, to the rest add 30, and half the last Sum shall make 35. I demand the Number? *Answ.* 700.

28. A asked B his Age; B answered thus, if you square my Age and divide the Product by 2, the Quotient you'll find to be 55 $\frac{1}{2}$. well says A, then you are exactly 10 $\frac{1}{2}$ Years.

29. If 16 Men in 20 Days build a Wall of 25 Feet long, 6 Feet high, and 2 Feet thick: In how many Days will 80 Men build a Wall of 400 Feet long, 10 Feet high, and three Feet thick? *Answ.* In 160 Days.

30. A Ship being mann'd with 300 Men, and is provided with Bread for 12 Months, so that each Man has 20 Ounces a Day, but having been 6 Months on their Voyage, they find it will require 9 Months more before they finish said Voyage, and also that they have lost 50 of their Men; now

X 3

tell

Handwritten scribbles at the bottom of the page.

tell me how many Ounces of Bread each Man may have during the said nine Months, each Month 30 Days? *Ans.* 16 Ounces.

31. A Merchant sold Tobacco at 15*d.* the *lb.* and lost at the Rate of 10 per Cent. he sold 100*l.* worth more of the same Parcel, and gained 40 per Cent. tell me how many *lb.* there were in the last Parcel, and at what Rate he sold it the *lb.*? *Ans.* 1028 $\frac{1}{2}$ *lb.* at 23 $\frac{1}{2}$ *d.* the *lb.*

32. Four Persons hire a Coach, to go 100 Miles, for 9*l.* 10*s.* with Condition that if they take any Body in upon the Road, the Profit shall belong unto them, now, when they have been gone 40 Miles, they take into the Coach two Persons, with Condition, that they shall pay proportionably with the other 4 Persons. I demand how much each of them ought to pay? *Ans.* the 4 Persons, 7*l.* 6*s.* 1 $\frac{1}{3}$ *d.* and the 2 Persons, 2*l.* 3*s.* 10 $\frac{2}{3}$ *d.*

33. A Vintner has a Cask of Wine, qt. 500 Gallons, of which he draws 50 Gallons, and then fills it up with Water, and does so 5 Times. I demand how much Wine and how much Water there is left in the Cask? *Ans.* 295 $\frac{49}{100}$ Gallons of Wine, and 204 $\frac{51}{100}$ Gallons of Water.

34. If a Mother and 2 Daughters together, can spin 3*lb.* of Flax in 1 Day, and that the Mother alone can do it in 2 $\frac{1}{2}$ Days, and the eldest Daughter in 2 $\frac{1}{4}$ Days, in what Time could the youngest Daughter do it alone? *Ans.* in 6 $\frac{3}{4}$ Days.

35. A Merchant loads 2 Vessels, in A 150 Hhds. and in B 240 Hhds. of Wine, the Ships coming by a certain Pass, A pays for Toll 1 Hhd. and receives 12*s.* back, B pays also 1 Hhd. and 36*s.* more. I demand at how much each Hhd. was valued? *Ans.* 4*l.* 12*s.*

36. A

36. A Gentleman bestows 1000*l.* in Legacies in this Manner, to A a certain Sum, to B $\frac{1}{4}$ more than to A, to C $\frac{1}{4}$ less than to A, and to D twice as much as to C. I demand how much each of them must have? *Answ.* A 222 $\frac{2}{3}$ *l.* B 277 $\frac{1}{3}$ *l.* C 166 $\frac{2}{3}$ *l.* and D 333 $\frac{1}{3}$ *l.*

37. When I sell a Yard of Cloth for 15*d.* I gain 10*s.* by the Piece, and when I sell the Yard for 14*d.* I gain 6*s.* by the same Piece. I demand how many Yards were in the Piece? *Answ.* 48 Yards.

38. Four Merchants have a certain Sum of Money to divide between them in this Manner, when A has $\frac{1}{4}$ of the whole Sum, then B gets $\frac{1}{5}$, and when C gets $\frac{1}{2}$, then D must have $\frac{3}{8}$, now if D gets 150*l.* for his Share, I demand how much the others must have? *Answ.* A 100, B 80, and C 200*l.*

39. Bought 40 Yards of Cloth, of 2 $\frac{1}{4}$ Yards broad; but being made wet, did shrink in Length upon every 4 Yards half a Quarter, and in Breadth upon 1 $\frac{1}{2}$ Yard, one Nail and half; to line this Cloth I bought Bays of 5 Quarters broad, which being made wet, did shrink upon 20 Yards in Length the whole Breadth, and in Breadth it did shrink half a Nail. I demand how many Yards of Bays would line the said Cloth? *Answ.* 71 $\frac{2}{3}$ Yards.

40. In what Time could I with 514*l.* gain 66*l.* 16*s.* 4 $\frac{4}{5}$ *d.* at the Rate of 8 per Cent. per Annum? *Answ.* in 19 $\frac{1}{2}$ Months.

41. If 4*lb.* of A weigh as much as 3*lb.* of B, and 5*lb.* of B as much as 4*lb.* of C, and 6*lb.* of C as much as 5*lb.* of D, how many *lb.* of D are then as heavy as 240*lb.* of A? *Answ.* 120 *lb.* of D.

42. There

42. There is a certain Number of Horſe and Foot to be ferry'd over a River, and they agree to pay for 2 Horſes $2\frac{1}{2}d.$ and for 7 Foot $3\frac{1}{2}d.$ now when they were all over, the Ferryman received 25 *l.* 7 Foot always followed 2 Horſe. I demand how many Horſe and Foot there were? *Anſw.* 2000 Horſe and 7000 Foot.

43. Three Merchants put in together 100 *l.* B puts in 3 Times as much as A, more 4 *l.* and C puts in as much as A and B. together, more 6 *l.* I demand how much each of them put in? *Anſw.* A 10 $\frac{3}{4}$ *l.* B 36 $\frac{1}{4}$ *l.* and C 53 *l.*

44. How many Pears can I have for 11 Shillings and 3 *d.* if 70 Almonds are worth 50 Cheſnuts, and 48 Cheſnuts 1 Pomegranate, and 28 Lemons 18 Pomegranates, and 25 Pears 10 Lemons, and 108 Almonds coſt $2\frac{1}{4}d.$? *Anſw.* 375 Pears.

45. Three Fiſhermen have each of them caught a certain Number of Fiſh, when the firſt and ſecond Man's Fiſh are put together they make 110, when the ſecond and third are put together, they make 130, and when the firſt and third are put by one another, then there are 120, now the Fiſh is to be divided equally amongſt them, I demand each Man's Share, and how many each of them had caught? *Anſw.* 50, 60, and 70, and each Man had 60 for his Share.

46. If 6 Gallons of Brandy, and 4 Cobs, (each 4 *s.* 9 *d.*) ſtand in Proportion againſt 15 Gallons leſs 5 Cobs, what is the Price of 1 Gallon? *Anſw.* 1 Cob.

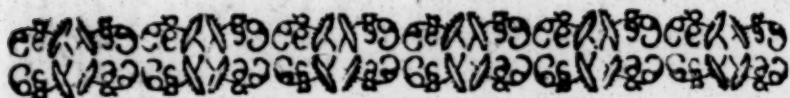
47. There are 12 Troopers, 25 Soldiers, and 18 Seamen, who have got a Booty of 897 *l.* now, according to Agreement, one Trooper muſt have

as much as two Soldiers, and 3 Soldiers as much as 5 Seamen, I demand each Man's Share? *Answ.* a Trooper 30 *l.* a Soldier 15 *l.* a Seaman 9 *l.*

48. There is a Golden Cup, valued at 70 Crowns, and two Heaps of Crowns, now when you put the Cup by one of the Heaps, they are together 4 Times the Value of the first Heap, but when you put the Cup by the second Heap, they are together double the Value of the first Heap, I demand how many Crowns there were in each Heap? *Answ.* 50 and 30.

49. Three Merchants made a Company, A put in 150 *l.* for 14 Months, B put in a certain Sum for a Year, and C put in ~~200~~ *l.* for a certain Time; some Time afterwards they found that their Stock and Profit together made 475 *l.* of which A took 195 *l.* B 153 *l.* and C 127 *l.* I demand how much B put in, and how long Time C's Stock was in? *Answ.* B put in 121 $\frac{3}{4}$ *l.* and C's Stock was in Company for 12 $\frac{2}{3}$ Months.

50. A Fountain has 4 Cocks, A, B, C, D, and under the Fountain stands a Cistern which can be filled by the Cock A, in 6 Hours, by B in 8, by C in 10, and by D in 12 Hours; now the Cistern has 4 Holes, as E, F, G, H, and can be emptied by the Hole E in 6 Hours, by F in 5, by G, in 4, and by H in 3 Hours: Suppose then the Cistern to be full of Water, and that all the Cocks and Holes were let run together, I demand in what Time the Cistern would be empty? *Answ.* in 2 $\frac{2}{3}$ Hours.



INSTRUCTIONS

FOR

BOOK-KEEPING.

QUESTION I.

HOW many Ways of dealing on Merchandize are there ?

A. Three ; viz. First, on one's own Account.
Second, on Commission.
Third, in Company.

Q. What doth Merchant's Business consist in ?

A. First, in buying and selling.
Second, in paying and receiving.
Third, in drawing and remitting.
Fourth, in sending Goods abroad, and receiving Goods from abroad.
Fifth, in insuring and getting Goods insured.
Sixth, in giving and receiving Interest, Mortgage and Bottomry.

Q. What is the first Thing to be done in order to keep your Books after the *Italian* Mannner ?

A. I must take the Inventory, or State of all that I have in the World, that is, Money, Effects, Debts, &c. which I must add up to know the total Sum: Next, I must set down what I am indebted to others, and if I take this last Sum from the first, the Remainder is what I am worth.

Q. How will you state in your Journal the Amount of the Inventory of your Effects ?

A. I

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A. I must make every Thing in particular, which I have, Debtor to Stock, that is to myself, as per Example.

Sundry Accounts Debt. to Stock, £. 7393 : 19 : 6

viz.

Cash, for so much I have in divers Specie	1345 : 10 : 0
House in <i>Broad-street</i> , for so much it cost me, — — }	859 : 10 : 0
Ship the <i>Neptune</i> , for so much she stands me in, — — }	765 : 00 : 0
Lands in <i>Imakilly</i> , worth —	2400 : 00 : 0
<i>Peter Lepper</i> of London (*H A) for Balance of Account, — — }	367 : 04 : 0
Voyage to <i>Hamburg</i> , for 400 Casks of Butter, in the Hands of <i>John Rougier</i> , — — }	600 : 10 : 0
Tobacco, for 12 Hhds. nett 6842lb. at 9d. per lb. is — — }	256 : 11 : 6
Wool, for 9 Bags, 207 Stone, at 11s. 6d. per Stone, — — }	119 : 00 : 6
Beef, for 500 Barrels, at 20s. per Barrel,	500 : 00 : 0
Hides, for 300 ps. 200 Ct. 3 qrs. olb. at 18s. per Ct. — — }	180 : 13 : 6

£. 7393 : 19 : 6

Q. How would you state the second Part of your Inventory, that is, what you are indebted to others?

A. I must make Stock, that is myself, Debtor to sundry Accounts, i. e. to every one in particular that I am indebted to, as per Example.

Stock Debtor to sundry Accounts, £. 1592 : 15 : 1
for so much I find myself indebted to the following Persons, viz.

To <i>Arnold Jacob</i> , his Account of Interest, — — }	500 : 00 : 0
To ditto, his Account, current for half Year's Interest, — — }	20 : 00 : 0

To

* For H A read his Accompt; and for M A my Accompt.

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To <i>J. Harrinbock</i> for balance of Accompts	104 : 00 : 0
To <i>Abraham Deveer</i> of <i>Rotterdam</i> , (M A) 1000 Guilders, which I value at 2s. each, is	100 : 00 : 0
To <i>Jonathan Richardson</i> , of <i>Lisbon</i> , (M A) 1100 D and 400 Reas, which I value at 6s. per Milrea,	
To <i>Anthony Dewit</i> , of <i>Bristol</i> , (H A)	116 : 00 : 0
To <i>Abraham Saunders</i> of <i>Limerick</i> ,	150 : 00 : 0
To <i>Samuel de la Fontaine</i> of <i>Rebelle</i> , (M A) 3849 Livres, which I value at 17d. make	272 : 12 : 9
	£. 1592 : 15 : 1

OF BUYING and SELLING.

Q. When you buy Goods for ready Money ?

A. Such Goods naming them, must be made Debtor to Cash.

Q. When you buy Goods upon Time ?

A. The Goods must be Debtor to the Person you bought them from.

Q. When you buy half for ready Money, and half payable upon Time ?

A. The Goods Debtor to the Person I bought them from for the whole Sum, and afterwards I make the Person from whom I bought the Goods, Debtor to Cash for the Money I paid him ; or thus, I make the Goods Debtor to sundry Accounts, viz. To Cash for one half, and to the Person I bought them for the other half.

Q. When you sell Goods for ready Money ?

A. Cash must be Debtor to the Goods sold.

Q. When you sell Goods upon Time.

A. The Buyer Debtor to the Goods sold.

Q. When you sell Goods for one half ready Money, and the other half upon Time ?

A. The Buyer Debtor to the Goods for the whole Cost, and Cash Debtor to the Person that bought them for the Money received ; or thus, sundry Accompts Debtor

Debtor to the Goods sold, *viz.* Cash for the Money received, and the Person who bought them for the Remainder.

Of receiving GOODS from abroad, and sending GOODS abroad.

Q. When you sell Goods which belong to another Person abroad?

A. I make the Person or Persons, to whom I sell, Debtor to Goods belonging to such a one.

Q. When you have sold all the Goods which did belong to your Friend, what must be done then?

A. First, I must see what Charges I have laid out on them; I must also cast up my Commission at $2\frac{1}{2}$ per Cent. or according to the Country where I am, both which Sums I must subtract from the Produce of said Goods, and the Remainder I call the nett Proceeds, which belong to the Person, whose Goods they are, then I must write in my Journal as follow.

Goods belonging to such a Person, Debtor to sundry Accounts, *viz.*

To Charges for Duty, Freight, Cellarage,
£c. — — — £.

To Profit and Loss for my Commission, £.

To the Owner for the nett Proceeds due
to him, — — — £.

Q. When you send Goods abroad for your own Account, suppose to Rotterdam?

A. I must make Voyage to Rotterdam Debtor to sundry Accounts, *viz.*

To the Goods I ship off for the Cost of
them, — — — £.

To Charges for Duty, &c. — — — £.

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Q. When your Correspondent sends you an Account Sales for the Goods you sent him?

A. I must make the Person that sold them M. A. Debtor to Voyage to *Rotterdam*, for the nett Proceeds according to his Account of Sale, which Proceeds, if they be in the Money of the Country where he lives, I must reduce (according to the current Exchange) to the Value of the Money of the Country where I am.

Q. When your Correspondent has, by your Order, and for your Account, bought and shipped Goods?

A. I must make Voyage from such a Place Debtor to him that bought and shipped them, M. A. for the whole Cost and Charges, according to his Account, which if it be in foreign Money, I must reduce to the Money of the Country where I am, according to the current Course of Exchange.

Q. When you ship off Goods for another Man's Account?

A. He for whose Account I ship them, H. A. must be Debtor to sundry Accounts, *viz.*

To Goods for the Cost thereof, £.

To Charges for the Duty, &c. £.

To Profit and Loss for my Commission, £.

Q. When any Body sends you Goods from abroad half for his, and half for your Account?

A. Voyage from such a Place, in Company with such a one, Debtor to him that sent the Goods M. A. for half the Amount, the which, if it be in foreign Money, must be reduced (at the current Exchange) into the Money of the Country where I am.

Q. When you sell any of the aforesaid Goods on Trust?

A. He that buys them is Debtor to Voyage from such a Place, in Company with such a one.

Q. When all the Goods in Company aforesaid are sold

A. Voyage

A. Voyage from such a Place, in Company with such a one, Debtor to sundry Accounts, viz.

To Charges for Duty, Cellarage, &c. £.

To Profit and Loss for my Commission, £.

To my Partner, H. A. for half the nett Proceeds, — — — } £.

To Voyage from such a Place, in Company with such a one, for my half nett Proceeds, — — — } £.

£.
Q. When you ship Goods, half on your own Account, and half on another Man's Account?

A. Sundry Accounts Debtor to sundry Accounts, viz.

He that is half concerned in the Cargo, for his half, — — — } £.

Voyage to such a Place, for my half, £.

To the Goods for the Cost thereof, £.

To Charges for Duty, &c. £.

To Profit and Loss for my Commission, £.

£.

OF DRAWING and REMITTING.

Q. What do the Words Drawing and Remitting signify?

A. Drawing is to write a Bill of Exchange, wherein I order a Person to pay a certain Sum to another Person. Remitting, is when I buy a Bill of Exchange, and send it to another Person to receive the Contents thereof.

Q. When you draw on any Body for your Account?

A. If I receive the Value, that is, Money, for the Bill, then I must make Cash Debtor to him on whom, or for whose Account I draw M. A. but if I do not receive the Money, then the Person to whom I gave the Bill is Debtor to him, or for whose Account I draw M. A.

Q. When you draw on any Body for H. A. and receive Value?

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A. Cash Debtor to him on whom I draw H. A.

Q. When you draw on any Body for H. A. and remit the Bill to another to be negotiated for your Account?

A. I must make Account of Exchange Debtor to the Person drawn on for the Sum.

Q. When you draw on any Body for your Account, and send to remit the Bill to another Person for your Account?

A. He to whom I remit the Bill, M. A. Debtor to him on whom I draw the same M. A.

Q. When you draw on any Body for your Account, and remit the Bill to another for his Account?

A. He to whom I remit the Bill, H. A. Debtor to the Person on whom I draw the same M. A.

Q. When any Body draws on you for your Account, and that you pay the Money?

A. He that draws on me, or orders to be drawn on me, M. A. Debtor to Cash.

Q. When any Body draws on you for his Account, and that you pay the Money?

A. He that draws on me, or orders to be drawn on me, H. A. Debtor to Cash.

Q. When your Correspondent draws on another for your Account?

A. The Drawer M. A. Debtor to him on whom he draws M. A.

Q. When you draw on any Body for your Account, and that the Bill is protested for Non-payment, and that another accepts and pays the Bill for your Honour, and for your Account?

A. He on whom I have drawn the Bill, M. A. Debtor to him that accepted and pays the same, M. A.

Q. When you draw on any Body for Account of another Person, and that you receive the Value?

A. Cash Debtor to him for whose Account I draw H. A.

Q. When any Body draws on you for Account of another Person, and that you pay the Value?

A. He for whose Account the Bill is drawn, H. A. Debtor to Cash.

Q. When

Q. When you have drawn on any Body for your Account, and that the Bill comes back with Protest of want of Acceptance or Payment, and that you reimburse or pay the Money with the Re-exchange, and other Charges of Protesting, &c.

A. Sundry Accounts Debtor to Cash, viz.
 He on whom I had drawn the Bill for } £.
 the principal Sum,
 Profit and Loss for Re-exchange and other } £.
 Charges,

Q. When you have drawn on any Body, H. A. or for Account of another, and that he lets the Bill be protested, and that another Person accepts the same, and pays it for your Honour?

A. He on whom or for whose Account the Bill was drawn, H. A. Debtor to him that accepts or pays the Bill, M. A.

Q. Suppose the Bill comes back with Protest, and that you reimburse the Money?

A. He for whose Account the Bill was drawn, H. A. Debtor to Cash, for the Principal and all other Charges.

Q. When any Body draws on another Person for your Account, and that the Bill comes back protested for want of Acceptance and Payment?

A. He on whom the Bill was drawn, M. A. Debtor to him that drew the Bill, M. A.

Q. When you take a Bill of Exchange to dispose of again?

A. Account of Exchange Debtor to Cash.

Q. But suppose you remit the Bill of Exchange to another Person for your Account?

A. He to whom I remit the Bill, M. A. Debtor to Cash, but if I send the Bill to any Body for another Man's Account, he for whose Account I remit the said Bill, his Account Debtor to Cash.

Q. When you negotiate, or sell Bills which you have kept for your own Account?

A. Cash Debtor to Account of Exchange.

OF REMITTING.

Q. When any Body remits you for your Account ?

A. Cash, Debtor to him that remits me M. A. and if it is for H. A. then Cash is Debtor to him that remits me H. A. and if it is for another Man's Account, then Cash is Debtor to him for whose Account it is remitted H. A.

Q. When any Body remits another for your Account ?

A. He to whom the Bill is remitted, M. A. Debtor to him that remitted the Bill, M. A.

Q. When any Body remits you for your Account, and that the Bill is payable in another Town or Country, and that you send the Bill to your Friend there to receive it for you ?

A. If I send the Bill for my Account, he to whom I send it, M. A. Debtor to him that remitted the Bill, M. A.

Q. When you remit any Body a Bill for your Account, and that the Bill comes back protested, and that he that gave you the Bill returns you the Money ?

A. Cash Debtor to sundry Accounts, viz.

To him to whom the Bill was remitted, M. A.

To Profit and Loss for the Re-exchange.

Q. When you have remitted to any Body for his Account, and that the Bill comes back protested, and that you are re-imburfed for the Bill and Charges ?

A. Cash Debtor to him to whom I had remitted the Bill, H. A.

OF INSURANCE.

Insuring, is to be responsible for a certain Sum of Money, which one has insured upon Effects or Goods which another has sent abroad, or otherwise, and to pay said Sum, in Case the Ship, in which the Goods were laden, happened to be taken by an Enemy, or cast away; as per Example, suppose I had sent some Goods to Sea, and had no Mind to run the Risque of their being either taken or lost, then I agree with some Person to insure

insure me a certain Sum of Money on said Goods, paying him 4, 5, or 6, &c. per Cent. more or less, according as the Voyage is dangerous or long, which Sum is called the Præmium; which I pay to him that insures me, as soon as he has signed me an Instrument or Paper, which is called a Policy, by which the said Insurer is liable to all Accidents, or Damages, which may befall said Goods during the Voyage, but if the arrive safe the Præmium remains in the Hands of him that insured me; and in Case the same Goods happened to be lost or taken by the Enemy, then the said Insurer is obliged to pay me the Sum which he had insured me.

Q. When you get Goods insured for your Account and pay the Præmium?

A. The Goods or Voyage Debtor to Cash for the Præmium, Policy, &c.

Q. When the Goods that were insured are lost, and that the Insurer pays you the Insurance Money?

A. Cash Debtor to Voyage, or to the Goods that were insured.

Q. When you insure to another, and that you receive the Præmium?

A. Cash Debtor to Account of Insurance.

Q. When the Goods insured are cast away, or taken by the Enemy, and that you pay the Money insured?

A. Account of Insurance Debtor to Cash.

Q. When your Correspondent gets Insurance made for your Account?

A. The Voyage or Goods Debtor to him that got the Insurance made for me M. A.

Q. When the Goods which your Correspondent had insured miscarry, and that he receives the Money that was insured then?

A. The said Correspondent, M. A. Debtor to Voyage or Goods insured.

Q. When you get Insurance made for another Man's Account?

A. He for whose Account I get Insurance made, H. A. Debtor to sundry Accounts, viz.

To

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To Cash for the Præmium, - - - - £.
 To Charges for the Policy, &c. at half } £.
 per Cent. - - - - }
 To Profit and Loss for my Commission, } £.
 at two and half per Cent. }

Q. When the Ship or Goods which you got insured for another Man's Account, happen to be lost, and that you receive the Money which was insured on them?

A. Cash Debtor to him for whose Account the Goods were insured, H. A.

OF BOTTOMRY.

Bottomry is when a Master of a Ship borrows Money on the Bottom or Keel of a Ship, so as to forfeit the Ship itself to the Person who lends the Money, if it be not paid at the Time appointed after the Arrival of the Ship at the Port designed, with the Interest of 30, 40, or 50 per Cent. according as it is agreed upon; but if the Ship miscarry, the Lender loses his Money, and therefore the Interest is usually so great.

Q. When you give Money on Bottomry?

A. Bottomry Account Debtor to Cash for the Principal, and to Profit and Loss for the Interest.

Q. When the Ship arrives, and your Friend advises you that he received both the Principal and Interest.

A. He who receives the Money, M. A. Debtor to Bottomry Account.

Q. When it happens that the Ship is cast away, on which you lent the Money?

A. Profit and Loss Debtor to Bottomry Account.

C. I N T E R E S T.

Q. When you lend Money at Interest?

A. P: to whom I lend the Money H. A. of Interest Debtor to Cash.

Q. When you receive the Interest?

A. Cash Debtor to Profit and Loss.

Q. When

Q. When you receive both Principal and Interest ?

A. Cash Debtor to sundry Accounts, viz.

To such a Person his Account of Interest for the Principal, to Profit and Loss for the Interest.

Q. When you take Money at Interest ?

A. Profit and Loss Debtor to him that lends the Money, H. A. of Interest ?

Q. When you pay Interest ?

A. Profit and Loss Debtor to Cash.

Q. When you pay Interest and Principal ?

A. Sundry Accounts Debtor to Cash, viz.

He from whom I had the Money, to H. A. of Interest for the Principal, and Profit and Loss for the Interest,

OF MORTGAGE.

To receive or give Money at Mortgage differs nothing from Money lent at Interest, but in this only, that for the Security of your Money you have Houses or Lands made over to you.

The Books in general used by Merchants are as follow, viz.

- | | | |
|------------------------------|---|------------------|
| 1. A Memorial or Waste Book, | } | Principal Books. |
| 2. A Journal, | | |
| 3. A Ledger, | | |
| 4. A Cash Book, | } | Inferior Books. |
| 5. A Factor Book, | | |
| 6. A Charges Book. | | |

The Number of Inferior Books cannot be lessened, but may be augmented.

Of the MEMORIAL and JOURNAL.

In the Memorial are written all the Affairs in general ; with their Circumstances one after the other, at the Time when they happen, which must be observed as exact as possible ; for in Case of Disputes and Differences, they often refer to this Book, as being the Original

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nal of all other Books. In the Journal are put all the Articles which are in the Memorial, with their Difference, as in the following Examples, *viz.*

[A Memorial Article.]

Cork, 1st January, 1760.

Sold to *Peter Clarke*, of this Town, 20 Hhds. of Tobacco, Weight 9465^{lb.} at 9d. per Pound payable 2d July, next, — — — £. 354 18s. 9d.

[A Journal Article.]

Cork, 1st January, 1760.

Peter Clarke, Debtor to Tobacco, £. 354 18s. 9d.
For 20 Hhds. sold him at 9d. per Pound, payable 2d July next, — — — £. 354 18s. 9d.

Now to post or bring the above Journal Article into the Ledger; first, you may in the Margin draw a Stroke thus $\frac{7}{2}$, above which is put a Figure, shewing the Folio of the Ledger, where *Peter Clarke* has H. A. which is here Folio 9, and underneath is put the 7, shewing where Tobacco Account is in your Ledger, and when you have posted it, that is, having made *Peter Clarke* Debtor in the Ledger, and given Tobacco Credit, put a Mark or Punct thus (Γ) before each Figure, which signifies that the Article is entered or posted in the Ledger,

Of the L E D G E R.

The Debtor Side of the Account of Stock, shews what you are indebted, and the Credit Side shews what is owing to you, and the Difference between them is what you are really worth, the Debtor Side of Account of Cash, shews what Money you have received; the Credit Side shews what Money you have paid, and the Difference is what you have in Cash.

All

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All that is in the Debtor Side of the Account of Persons, is what they are indebted to you ; and all that is in the Credit Side is what you are answerable for to them ; the Debtor Side of the Account of Merchandizes, shews what Quantity you have bought, and what they cost ; and the Credit Side shews how you have disposed of them and their Produce.

In the Debtor Side of Profit and Loss, stands all you lose ; and in the Credit Side stands all you have gained. In general, all that is in the Debtor Side of the Ledger, except the Account of Stock, Profit, and Loss and such like, is what is due to you, or what you may call your own ; and all that is in the Credit Side, is what you owe to others, or what you are answerable to them for.

Of the CASH BOOK.

The Cash Book is also kept by Debtor and Creditor ; on the Debtor Side put all the Money you have received, from whom or for what, and on whose Account, and in what Species ; in the Credit Side you put all the Money paid, to whom, for what, for whose Account, and in what Species.

Of the FACTOR BOOK.

In the Factor Book are copied all the Invoices and Account of Sales whatsoever.

Of the CHARGES BOOK.

The Charges Book serves only for the Entry of all Manner of Charges, which are duly paid, as Portorage, Labourers, Boat Hire, Cellarage, &c. the total Sum of which at the End of every Month, is put down in the Memorial in one Article.

Of

Of the B A L A N C E.

When your Books are posted, pointed, and examined, you must add up all the Accounts in the Ledger ; that is, sum up all the Debtor Sides, and the Credit Sides, and if the Totals do agree, then your Books do balance ; or thus, take the Difference of all the Accounts, whatever the Debtor exceeds the Creditor, and put them under one another ; and also whatever the Credit Side exceeds the Debtor, and put them also under one another, and if their Totals are alike, your Books do balance.

OF P R O F I T and L O S S.

The Accounts by which you can be a Gainer or a Loser, are, *viz.* Account of Merchandizes, Voyages, or Goods sent abroad, Account of Exchange, or such Account of Persons where the foreign Money is kept within the Lines. Now to know what you have gained or lost by any Account of Merchandizes, add up in the Debtor Side the Quantity of Casks, Bales, Weights, or Measures, which you have bought ; do the same in the Credit Side with what you have sold, and if you find as many Bales, Casks, Weights or Measures, &c. in the Credit Side, as in the Debtor Side, that shews that the Goods you have bought are sold or otherwise disposed of ; if the Money in the Credit Side exceeds that of the Debtor, that is what you have gained by the said Goods, but if the Money in the Debtor exceeds that of the Creditor, the Difference is what you have lost by them. The same is to be observed in all Accounts of Voyages, Account of Insurance, Account of Exchange, or any Account whereby you may be either Gainer or Loser.

If any Man's Account, which is called My Account, balances in the foreign Money, that is the Money that is kept within side of the Country Money where you live, then you owe nothing to him nor he to you ; but if the Debtor of the outside Money, that is, the Money of the Country where you are, exceeds the Creditor,

Creditor, so much is lost by the difference of Exchange; and if the creditor exceeds the debtor, so much is got by it.

Having thus examined said several Accounts, and noted their Profits and Losses on a piece of paper, then write in your Journal thus: Profit and Loss debtor to sundry accounts, that is, to every one of those accounts in particular, for as much as you have lost by them, and make fundry accounts, that is, every one of those accounts you have got profit by, debtor to Profit and Loss.

All those accounts being posted and closed in the Ledger, you must add up your account of Profit and Loss in the Ledger, and whatsoever the creditor exceeds the debtor is clear Profit, or what your Stock is increased, for which sum you must make Profit and Loss debtor to Stock; but if the debtor exceeds the creditor, that is, what you have lost, and your stock is so much diminished, for which Sum you must make Stock debtor to Profit and Loss.

A D V I C E to a Young M E R C H A N T.

Whatsoever you take in hand, or do, be sure you deal justly by all men, for ill gotten goods seldom prosper long. Be not too hasty to be over rich, for that often-times brings one to Poverty. Be not too greedy of falling into much business, for great Merchandizes make a man either rich or poor soon. Rob not the King of his custom, for many times a pound that way gotten costs ten. Trade not in deceitful, unmerchantable false Wares. Keep just Weights, equal Balance, and lawful Measures. Take good notice of all you receive in and pay out in the way of your Trade. Keep your Books and Accounts exact and in good order, for therein consisteth the Credit of a Merchant. Be often perusing your Books, to acquaint yourself with your Estate, for many through neglect in that, have not only been undone, but greatly disgraced. Adventure no more at any time than, that if you lose you can bear; make your adventure in many Parcels, that

if one fail the others perhaps may help up the Loss. Take heed with whom you deal, and whom you trust; trust no man till you have tried him first. Seek not, without great necessity, to be credited by others, for the more you trade on your Stock, the less care and more Honour you have. Be not lightly Security for others, for many thereby suffer damages; neither lightly desire any to be security for you, for one good turn requires another. What you have once promised, be careful to perform, for Merchants may suffer by not keeping their Word. Therefore, when you have payments to make, and provide in Time, have the sum and days in continual remembrance. Be as careful as possible not to trade above your Stock.

Leave not your business too much to another, but have a continual Oversight of it yourself. Live not in Fashion, either above or inferior to your rank, but keep in a middle way. Love more your reputation than your riches; when you have gained, praise God, and remember the Poor. Be not prodigal, for that is wasting, nor yet niggardly, for that is base. Keep still a noble, generous mind, guided by a good understanding. Have a certain ordinary time of being at home, and miss no Man, if it be possible, at the time appointed. Frequent the Exchange and other meeting places of Merchants, for absence makes a Man sometimes suspected. If you deal for others, do for them as for yourself, you thereby gain Friends and Reputation. Be sure you follow the orders you receive from your Correspondents punctually. Settle often with those you deal with, for short Accounts make long friends. Let your Letters be concise and to the Purpose, free from quaint and studied expressions; there ought to be nothing obscure or superfluous in them, or any affected Abbreviations, for all orders and circumstances of trade are plainly to be delivered. Tell your Correspondent in plain Terms what you would have done for you, and what you are to do or have done for him.

The

The DIGNITY of TRADE in *Great Britain and Ireland* : Extracted from the
MERCANTILE LIBRARY, or COMPLEAT
ENGLISH TRADESMAN.

IS not Trade the inexhaustible fund of all funds, and upon which the rest depend? Trade is the readiest way for Men to raise their fortunes and families; and therefore it is a field for Men of figure and good families to enter upon.

By Trade, we must be understood to include Navigation, and foreign discoveries, because they are, generally speaking, all promoted and carried on by Trade, and even by Tradesmen, as well as Merchants; and the Tradesmen, as owners, are at this time as much concerned in shipping as the Merchants, only the latter may be said to be the chief employers of the Shipping.

Having thus done a particular piece of justice to ourselves, in the value we put upon Trade and Tradesmen in *England*, it reflects very much upon the understandings of those refined heads, who pretend to depreciate that Part of the Nation, which is so infinitely superior in wealth to the Families who call themselves Gentry, and so infinitely more numerous.

As is the Trade, so in Proportion are the Tradesmen; and how wealthy are Tradesmen in almost all the several Parts of *England*, as well as in *London*? How common is it to see a tradesman go off the stage, even but from mere shop-keeping, with from ten to forty thousand pounds estate, to divide among his family? when, on the contrary, take the Gentry in *England*, from one end to the other, except a few here and there, what with excessive high living, which is of late grown so much into a disease, and the other, ordinary circumstances of families, we find few families of the lower Gentry, that is to say, from six or seven hundred a year downwards, but what are in debt, and in necessitous circumstances, and a great many of greater estates also.

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On the other hand, let any one who is acquainted with *England*, look but abroad into the several counties, especially near *London*, or within fifty miles of it, how are the ancient families worn out by time, and family misfortunes, and the estates possessed by a new race of tradesmen, grown up into families of gentry, and established by the immense wealth gained, as I may say, behind the counter; that is, in the Shop, the ware-house and the compting-house!

In how superior a port or figure (as we now call it) do our tradesmen live, to what the middle gentry either do or can support? An ordinary tradesman now, not in the city only, but in the country, shall spend more money by the year, than a gentleman of four or five hundred pounds a year, can do, and shall increase and lay up every year too; whereas the gentleman shall at the best stand stock-still just where he began, nay, perhaps, decline: and as for the lower gentry, from an hundred pounds a year to three hundred, or thereabouts, *though they are often as proud and high in their appearance as the other*; as to them, I say, a *Shoemaker* in *London* shall keep a better house, spend more money, cloath his Family better, and yet grow rich too. It is evident where the difference lies; an *Estate's a pond*, but *Trade's a spring*: the first, if it keeps full, and the water wholesome, by the ordinary supplies and drains from the neighbouring grounds, 'tis well, and 'tis all that is expected; but the other is an inexhausted current, which not only fills the *pond*, and keeps it full, but is continually running over, and fills all the lower ponds, and places about it.

This being the case in *England*, and our trade being so vastly great, it is no wonder that the Tradesmen in *England* fill the list of our nobility and gentry; no wonder that the gentlemen of the best families marry tradesmens daughters, and put their younger sons apprentices to tradesmen: And how often do these younger sons come to buy the elder sons estates, and restore the family, when the elder, and head of the house, proving rakish and extravagant, has wasted his patrimony, and is obliged to make out the blessing of *Israel's* family,

family, where the younger son bought the birthright, and the elder was doomed to serve him.

Trade is so far *here* from being inconsistent with a gentleman, that in short, *Trade* in *England* makes gentlemen, and has peopled this nation with gentlemen; for, after a generation or two, the tradesmens children, or at least their grand-children, come to be as good gentlemen, statesmen, parliament-men, privy-counselors, judges, bishops, and noblemen, as those of the highest birth, and the most ancient families; as we have shewn. Nor do we find any defect in either the genius or capacities of the posterity of tradesmen, arising from any remains of mechanic blood, which 'tis pretended, should influence them; but all the gallantry of spirit, greatness of Soul, and all the generous principles that can be found in any of the antient families, whose blood is the most untainted, as they call it, with the low mixtures of a mechanic race, are found in these; and, as is said before, they generally go beyond them in knowledge of the world, which is the best education.

To bring this home to the ladies, who are scandalized at that mean step, as they call it, of marrying a tradesman; it may be told them, for their humiliation, that, however they think fit to act, sometimes those tradesmen come of better families than their own; and oftentimes, when they have refused them to their loss, those very tradesmen have married ladies of superior fortune to them, and have raised families of their own; who, in one generation, have been superior to those nice ladies both in dignity and estate; and have, to their great mortification, been ranked above them upon all public occasions.

The word *Tradesman*, in *England*, does not sound so harsh as it does in other countries; and to say a *Gentleman-tradesman*, is not so much nonsense as some people would persuade us to reckon it: and indeed, the very name of an *English* Tradesmen will, and does already obtain in the world; and as our soldiers, by the late war, gained the reputation of being some of the best troops in the world; and our seamen are this day, and very justly too, esteemed the best sailors in the world: so
the

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the *English Tradesmen* may be allowed to rank with the best gentlemen in *Europe*; and, as the Prophet *Ishai* said of the merchants of *Tyre*, that her *Traffickers were the honourable of the earth*.

The greatness of the *British* nation is not owing to war and conquests, to enlarging its dominions by the sword, or subjecting the people of other countries to our power; it is all owing to *Trade*, to the increase of our commerce at home, and the extending it abroad.

It is owing to *Trade*, that new discoveries have been made in lands unknown, and new settlements and plantations made, new colonies planted, and new governments formed in the uninhabited islands, and the uncultivated continent of *America*; and those plantings and settlements have again enlarged and increased the trade, and thereby the wealth and power of the Nation, by whom they were discovered and planted: we have not increased our power, or the number of our subjects by subduing the nations who possess those countries, and incorporating them into our own; but have intirely planted our colonies, and peopled the countries with our own subjects, natives of this island; and, excepting the negroes which we transport from *Africa* to *America*, as slaves to work in the sugar and tobacco plantations, all our colonies, as well in the islands as on the continent of *America*, are entirely peopled from *Great-Britain* and *Ireland*, and chiefly the former; the natives having either removed farther up into the country, or by their own folly and treachery, rising war against us, been destroyed and cut off.

What is it but *Trade*, the increase of business at home, and the employment of the poor in the business and manufactures of the kingdom, by which the poor get so good wages, and live so well, that they will not enlist for soldiers; and have so good pay in the merchants service, that they will not serve on board the ships of war, unless they are forced to do it?

The Inland trade of *England* is a thing not easily described; it would in word, take a up a whole book by itself: it is the foundation of our wealth and greatness; it is the support of all our foreign, trade, and of our home manufactures.



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